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February 1991

Old wrenches can be objects of beauty for tool collectors (p. 52)

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February 1991

Smithsonian

Volume 21, Number 11

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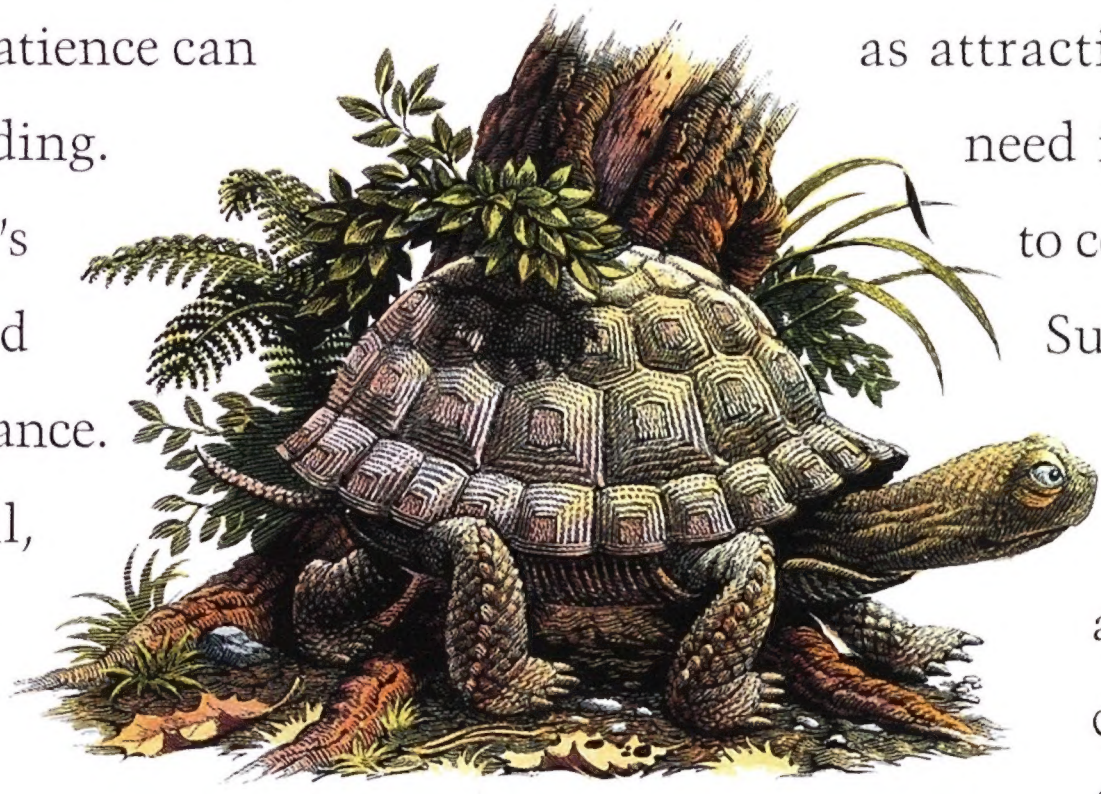

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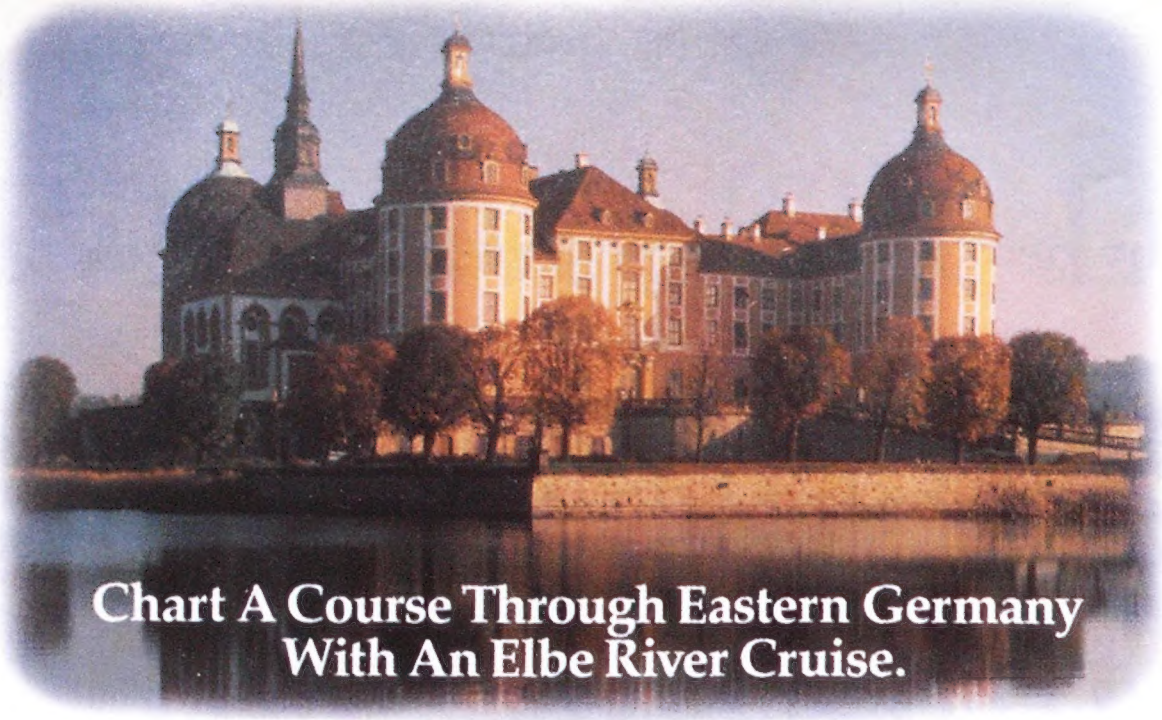

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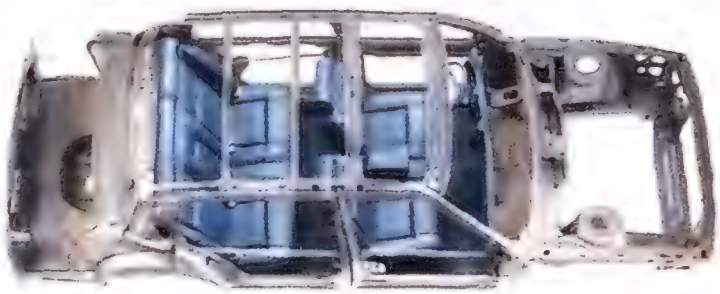

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Secretary Adams' comments

Smithsonian horizons

A recent conference in Arizona raised some questions about America's lack of innovation compared with Japan's

Anyone who shops for items like electronics, cameras or toys is aware of how dependent on foreign manufacturers we have become for new consumer ideas. American prowess in basic scientific discoveries notwithstanding, economic studies have provided convincing evidence that our declining competitiveness in international markets is at least partly attributable to a lagging rate of innovation with new products. Why is this so? What can be done about it?

The usual academic answers to these questions marshal statistics to contrast American with, say, Japanese industrial performance. But lacking the vividness of immediate experience, they are for the most part not very helpful as guides for particular firms or even industries.

In December, at the University of Arizona, I had the pleasure of participating in a conference that took a different, more illuminating approach. It examined innovation processes in American and Japanese industries by focusing on three types of advanced materials that are still in an early stage of commercial development. Made most familiar to us by the media are high-temperature oxide superconductors, but silicon nitride structural ceramics (used in some car engines) and synthetic diamonds produced at low temperatures are also finally on the threshold of significant commercial exploitation—with, in each case, the Japanese well in the lead.

All are materials of high commercial potential. All are the results of scientific research extending over generations, although it may have periodically shifted in direction or lain dormant for a while. Also over many years, all have required massive, risky investment to identify marketable uses and to develop reliable, less costly production processes. It is in these latter stages that American firms have generally abandoned the chase.

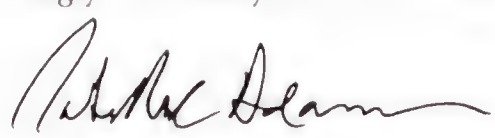
Participants at the conference, convened by materials scientist W. David Kingery, included mostly Japanese and American scientists and engineers who have played leading roles in basic or applied research on one or more of these technologically demanding substances. Most knew one another's work well, and there had been a surprising (to me) degree of direct contact in one another's laboratories. Further enriching the mix was a sprinkling of generalists in science policy or organization theory, and of anthropologists like myself with a presumed sensitivity to the social and cultural context of innovation.

These contextual factors are in many ways the most elusive, dynamic and difficult to deal with. Our higher cost of capital and inability to sustain long-term development without firm assurance of an existing market have been widely noted. Less often taken into account is the way in which U.S. Government needs (particularly those of the defense establishment) have turned corporate effort and the stream of talent recruitment toward developing high-performance materials rather than reducing costs. Further contributing to Japanese commercial success have been much larger investments in industrial laboratory instrumentation and in process and production engineering. More uncertain is the effect of a closer integration of the Japanese scientific and engineering communities, and even of their priorities, although this may be disputed.

The problem is that contextual factors are, precisely, those most deeply embedded in the larger social order and hence the most difficult to alter. This applies to the Japanese no less than to ourselves. One can only speculate whether the traditional stability of their corporate careers can be retained as rising incomes give new salience to quality-of-life issues. Or again, can the heavy reliance on the Japanese family as the guiding metaphor for corporate organization retain its force when the virtual exclusion of women from scientific and managerial careers leads to increasing tension?

Prominent among the factors accounting for superior Japanese competitive performance is an organizational approach strikingly different from its counterpart here. The basic units in Japanese laboratories, and even on production lines, are cooperative work groups. Ranging widely across related disciplines, these groups typically include craftsmen and technicians as well as senior scientists and engineers. There is a consistent emphasis on consensus-seeking; on the making of decisions by those as close as possible to the point at which they must be implemented; and on the opening of channels of communication at all levels. Individual workers are given every opportunity to attain their full potential by being cross-trained in a variety of skills, rather than being forced into routine assignments in which they are essentially viewed as expendable parts of a machine.

The result, clearly, is a deeply felt attitude of mutual respect and loyalty that results in consistently superior responsiveness, accountability and performance. The lesson is, as one conference participant observed, that "people make a difference." That lesson is as disarmingly elementary as it is universal.



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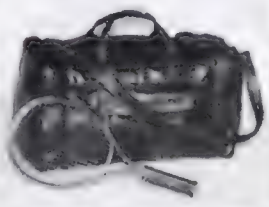

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Letters to the Editor

Tony Hillerman

Dear Sir: Regarding Tony Hillerman, in your December 1990 issue, we were introduced to him by a columnist for the *Las Vegas Sun* who visited our home and sent us our first adventure with Jim Chee and Joe Leaphorn. That set us on a search for all the others. When we asked in bookstores in Las Vegas we were told, "We can't keep 'em in stock!" We had to chase down copies all over the Southwest.

As we relaxed on the rim of the Barranca del Cobre in Mexico, a young geologist from New Mexico stopped to inquire about the copy of *Skinwalkers* we were reading. He and his professor friend were also Hillerman fans.

Mrs. C. G. Andress
Nelson, Nevada

Dear Sir: I confess that I read Tony Hillerman's books primarily for their fascinating insights into the Navajo culture.

They once saved me from making a major cultural faux pas. A few months ago I took my Cub Scout den to a performance by Kevin Locke, a noted Sioux hoop dancer. After the performance, we had the privilege of meeting Mr. Locke.

He had a curious, three-fingered, limp handshake. My first reaction was—we've offended him somehow. Then I recalled a description of the polite Navajo handshake from Mr. Hillerman. When it was my turn, I was able to return the handshake in the same manner.

Barbara Kelsey
Lyme, Connecticut

Dear Sir: I strongly disagree with writer Michael Parfit's description of the legendary Coyote as a figure "who mixes playfulness with evil." Coyote is not

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good or evil. He is a Trickster, a symbol of the creative and destructive powers of the Universe, a character known and revered in cultures around the world.

Coyote is part of a pantheon that includes the Hindu monkey god Hanuman, the Eskimo and native Alaskan Raven, and the African-American Brer Rabbit. English and Appalachian folklore know the Trickster as Jack, the rascal and giant-killer. All these figures move far beyond the narrow definitions our Western society has of "good" and "evil." Tricksters follow their own code; they keep things interesting and mixed-up for us mortals.
Maggie McQuaid
Anchorage

The Dorotheum

Dear Sir: In Vienna in the 1930s, I firmly believed the Dorotheum was where you took your Oriental carpets to be cleaned. Born in 1925, I was a small boy during the Depression.

I was an adult living in the United States before I understood the true functions of "Tante Dorothee" and realized that my family's rugs were hocked from time to time, reappearing when conditions made it possible to redeem them.
Lucian Heichler
Frederick, Maryland

Manual typewriters

Dear Sir: I teach journalism at Penn State University. Our newspaper reporting and editing labs are equipped with computers; our radio news lab, with 15 venerable Olympia Standards. One young woman—fresh from her news-writing course, in which she had used a computer—sat down at the old Olympia to write her first radio news assignment.

"Where do you turn this thing on?" she asked. "You don't," I said. "You just put in a piece of paper and start typing." "Unreal," she said, "that's rad!"

Other students have asked similar questions and have complained about how tired and short-fingernailed they are after an afternoon slaving over the non-power-assisted keyboard. But they come to recognize some advantages to low tech: there's never a line waiting to use them; they work even when the power goes off; and if the document being "processed" disappears, the student can usually find it on the floor behind the desk. An Olympia Standard may chew up portions of a term paper; I've never known it to eat one entirely.
Janet H. Keefer
State College, Pennsylvania

Dear Sir: At the Centennial Exposition in Philadelphia in 1876, the Remington Company had a typewriter on display. For 25 cents, a visitor could dictate a letter to an experienced operator, sign it and insert it into a special envelope imprinted with a three-cent stamp in honor of the Exposition. It received the special Exposition postmark.

The crowds wanting this novelty were so great that in a fortnight the typewriter was giving forth identical letters stating they had been written on a new invention called the "typewriter."

The value to philatelists of these typewritten novelties with the scarce Exposition postmark is considerable.
Herman Herst jr.
Boca Raton, Florida

Dear Sir: I am writing on my dear old Underwood No. 5 typewriter; I have two—one at home and one in the office. I found them some years ago, in the garbage at my company, filthy and ailing from countless years of heavy-duty use. I'm also fortunate to have a "John Lewis" in my neighborhood, who recently restored them beautifully.
Irmina Bruns
New York City

Ruby, the painting elephant

Dear Sir: In June 1943, while enjoying a stay in New Zealand, courtesy of the U.S. Marines, I visited the Auckland Zoo and made the acquaintance of an ingenious Indian elephant, Mabel. My buddy Bob Paynter and I found Mabel, whose yard was being cleaned, confined in a dreary concrete room divided by a wall seven feet high, Mabel on one side and visitors on the other. She peered at us over the top of the wall, then retreated out of sight, grumbling and gurgling thoughtfully before falling silent. Suddenly, she peered over the wall again, extended her trunk over our heads and treated us to a thorough shower bath. As two Marines expressed their surprise somewhat profanely, Mabel chuckled with all her heart and moved about rapidly, in what I'll swear was a little dance of joyful triumph.

Her keeper confessed that Mabel frequently sacrificed her bucket of drinking water for the sake of a jest. She detested confinement in the concrete

room and diverted herself with a touch of malice—"gettin' a bit of her own back, don't you see?"
Frank D. Dollard
San Francisco

Dear Sir: Several hours before I read your article I had a foolish but enjoyable discussion about the definition of art. Your article gave me great insight.

As a result, I developed a test for whether or not something is art: if an elephant can produce something similar to the so-called piece of art under consideration, it's definitely not art. If an elephant can't, it probably *is* art.
John Robert Hightower
Huntsville, Alabama

Dear Sir: This sort of reporting mocks art and the efforts of art educators, who believe that through a human being's efforts at thinking, perceiving and feeling, art can be created. If an elephant can create "art" this easily, why bother with quality art lessons in the schools?
Donald Herberholz, Chair
Art Department, California State University, Sacramento

Global warming

Dear Sir: The Vikings, beginning in the eighth century, sailed their open boats into regions not previously accessible to them. Their Greenland settlement flourished, then ended with starvation during the 15th century. Ships and men could not withstand the rigors of the increasingly cold and stormy weather and the pack-ice-clogged harbors.

How may we explain such an aberration? No internal combustion engines existed, no steam engines, no factories to spew contaminants into the air. Someone will have to do a lot more exploring and explaining if the greenhouse theory, as it applies to us, is to make sense. I remain dubious.
Robert VanderKloot
Bloomfield Hills, Michigan

Presidential gifts

Dear Sir: Mr. Keller ends his article with President Bush's "baited breath." Is that something one would use to build a better mouth trap?
Ronald J. Serafine
Butler, Pennsylvania

Dear Sir: President Bush may be an avid fisherman. However, I doubt that he would go so far as to bait his breath. A hook is so much more effective.
Thomas A. Cadogan
Bangkok

Often has my breath been "baited,"
But I've rarely had to state it
In writing.
I'm desolated,
And my pain stays unabated.
Having now this pome created,
I do swear to spell it "bated."
(Professional) suicide note from a mortified Copy Editor.

Around the Mall

Dear Sir: Please tell Edwards Park's wife that at least two museum visitors tried on the Hope Diamond—sort of.

Years ago, while visiting the Museum of Natural History's Gem Hall with a friend, I glanced across the room and saw her gesturing urgently to me to come and see the famous stone. "Look," she said, "if you scrunch down just right, you can see yourself reflected in the glass and it looks like you're wearing it." So we both "tried it on."
Inta Hasenkamp
Hillsborough, California

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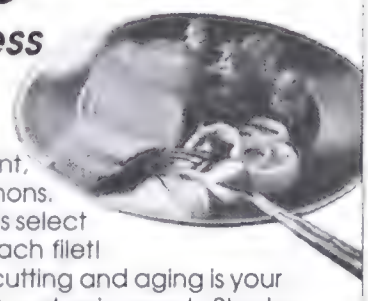

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Around the Mall and beyond

The swinging door opens and a tall man, dusty from riding the dry rangeland, stalks slowly into the dim barroom. Music swells in the background—ominous notes, repeated again and again, each time ending in brief, staccato drumbeats like bursts of gunfire. The tall man peers from under the brim of his sombrero at a gambler in a brocaded vest, seated at a table, restlessly shuffling a new pack of cards.

"Wanna see a card trick?" asks the gambler, in a soft Texas drawl.

"Sure," says the tall man, warily.

With dramatic deliberation, the gambler lowers the edge of a card into a glass half-filled with a transparent liquid. A close-up reveals the card's bright symbols and figures breaking up, the cardboard itself dissolving.

He then dunks a card into another, similar glass. Same result.

He explains the first: "Sulfuric acid." Then the second: "Sodium hydroxide." There's menace in his words.

In a third glass is a liquid just as transparent: "Equal parts sulfuric acid and sodium hydroxide together." He holds a card above the mixture. "Now," he says forebodingly, "Whaddya think's goin' to happen to the card?"

At that point, the action on the video—for that's what this is—stops. Says Jacqueline Hess (right), director of the Smithsonian's National Demonstration Lab, "This gives the teacher a chance to take over and see whether the students can answer the question."

I am pretty sure I can, even though chemistry defeated me decisively, *first* time around, at college. As the action resumes on the monitor, I heed it far more attentively than I ever did in my own distant classrooms and labs.

The tall man is forced to answer. "Ah don't know," he admits.

The gambler looks up at him with a thin smile. "It gits . . . *wet*," he announces, as he drops the card into the mix. Nothing happens to it. I'm right, for once. In a corral, offstage, a horse whinnies . . .

This little scene is a sample of how kids are beginning to be taught nowadays. It's one of several programs based on the new technology of interactive video that educators can see and try out, by appointment, at what's properly called the National Demonstration Laboratory for Interactive Educational Technologies, handily abbreviated to NDL.

The chemistry lesson I am watching happens to be an award winner, put out—aptly enough—by the Texas Learning Technology Group. The tall man, thinking aloud, figures that the two chemicals must have neutralized each other, "sorta like hot water and cold water make lukewarm water."

"Purty good analogy . . . *stranger*," says the gambler. He sounds deeply regretful that the action is ending without anyone slapping leather. He explains that a strong acid mixed with a strong base produces a neutral. "Well ah'll be . . ." says the tall man. I echo his sentiments as the barroom cameo fades out. I had never thought that chemistry could be fun.

NDL occupies a large room in the Smithsonian's Arts and Industries Building, just off the main-entrance gallery. A big part of the display area in that 1881 structure is being busily revamped. But NDL remains a quiet haven for the testing, evaluation and, of course, demonstration of new interactive technologies and teaching programs.

Jacqueline Hess displays card-trick chemistry and other interactive videos.

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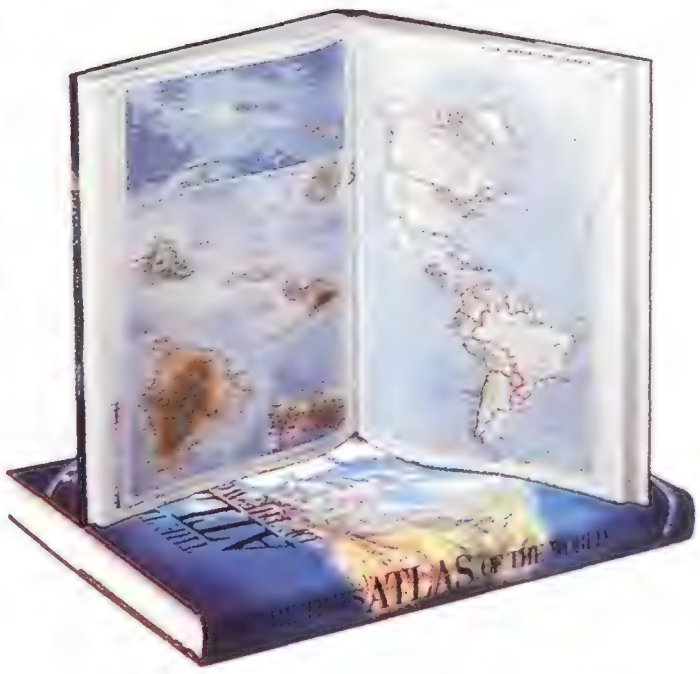

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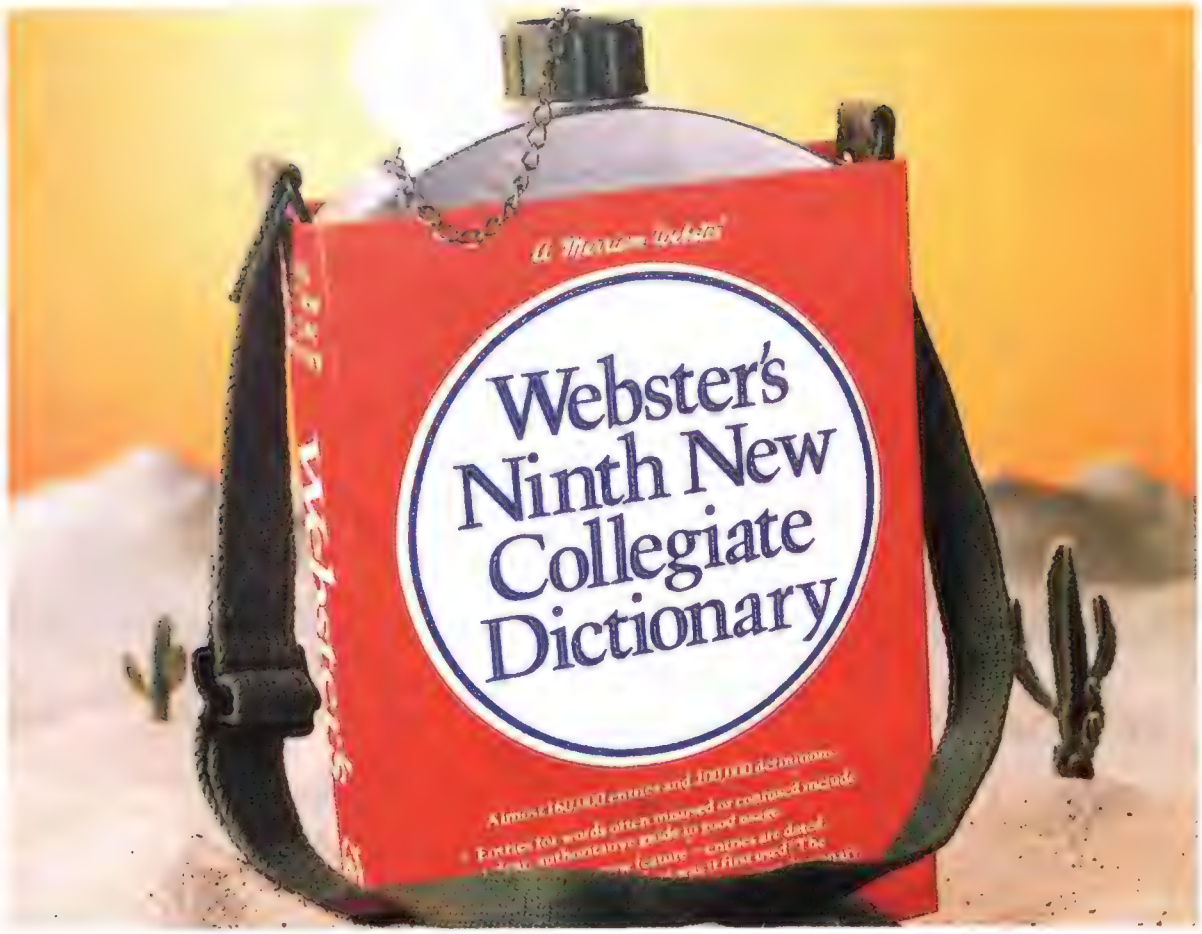

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Entering, you find gleaming, glassy eyes of video monitors staring at you from every wall. If the confrontation makes you feel like a barbarian who has blundered witlessly into a temple, Jackie Hess quickly renders it less daunting. Though you may have language difficulties with her at first—she uses words like "analog" and "digital" and "access" and "icon"—her enthusiasm for this new religion is catching.

She leads me to one of 17 workstations, reminding me as we go that the word "interactive" indicates that users of the programs have some control over what appears on the screen.

"There are four levels of interactive video systems," Hess explains. Level One turns out to be a basic videodisk player that requires roughly the same brains as my videocassette recorder which, after painful lessons from a 9-year-old grandson, I've gingerly mastered. Level Two ventures further, allowing users to jump around the program, call up chapters, skip, repeat.

Both Levels One and Two can be simply hooked up to your TV set. Level Three combines the videodisk player with a computer and can make use of two monitors. Level Four puts everything into one piece of hardware and an advanced digital format. It's the cutting edge and so far has been used mostly by the military.

Exciting techniques in teaching are already taking place at Level Three. By calling on the computer's memory, students can research bits of information and pursue digressions that the videodisk inspires. They steer their course through a subject with a touch or two on a keyboard or sometimes on the screen itself. Or they may use other control devices: light pen or roller ball, joystick or mouse. All open the doors to both the program packed into the disk and the knowledge in the computer's memory bank—the data base, as the new priesthood calls it. "It's like wandering through a library," says Hess.

Example: if you were a student assigned to write an essay about some aspect of Martin Luther King jr.'s life, the NDL could practically do your paper for you. It has an interactive disk dealing with King.

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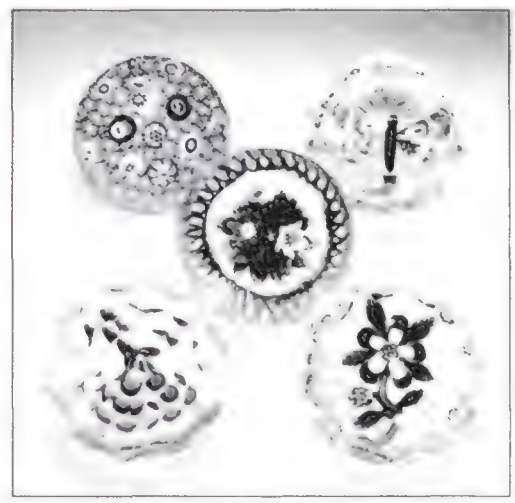

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but shines with an iridescent silver color. She inserts it into its player and clicks it on. "This," she says, "offers you 108,000 still pictures, or 60 minutes of motion pictures, or a mixture in varied amounts within that parameter." All this visual information is supplemented by the computer's huge memory bank.

"Let's find out about King's nonviolent philosophy," she suggests. With a mouse she touches one of the "icons" that appear on the screen. These are little symbols, like an arrow or the outline of a stack of papers that, as Hess says, you soon get to know. In this case, we face a series of information cards filled with writing. We can flip through them at our own pace.

Some items appear in bold type. "That means the data base has additional information about them," says Hess. She clicks one into action by touching it and pushing a button on the mouse, and the screen comes alive with a newsreel of one of the nonviolent marches that King led here in Washington.

"I think I was in that," I say.

"So was I," says Hess. "I was just a little girl."

I shut up.

Next we chase down "Nonviolence," searching and clicking. Following that theme, we produce Gandhi on the screen—the leader who started it all. On a whim, we trace his career for a while, then return to King. Ever prey to digressions, I realize I could follow them to my heart's content.

Some educators worry about the ocean of information that users can seemingly drown in by using interactivity. They'd prefer students to be led logically from one point to the next, to get the sequences straight and not be overwhelmed with so many options. Intellectual chaos, they call it.

Others point out that you're learning primary-source research. Interactivity gives you a chance to pursue information about King according to your own personal interests. Jackie Hess foresees beneficial compromises. An ideal program might lead the user along the track of finding out about the primary subject, but still show how one bit of information is linked to many others.

"The computer," she says, "appears to understand what you know, and also acknowledges that you don't yet know what you *don't* know." That sounds pretty bewildering at first, but I quote it because it's simple stuff to the initiates.

Examples always make things clearer to me. Hess takes me back to the nonviolence theme. Clicking an icon, we see a menu on the screen and find that there are 16 more items relating to nonviolence, some of them text, some pictures. The computer knows that my interest is in nonviolence. But it also recognizes that I don't yet know King discussed nonviolence in some of his speeches. So, it tells me that's one place I might want to look to find out what he thought about it.

Hess clicks an icon in the form of a movie camera, and we see and hear King discussing nonviolence during one of his speeches. By clicking another icon, the text appears on the screen so that we can follow along. The segment is brief, but a further option produces a category labeled "King's Speeches," so we could, if we wanted, look up the entire speech and read it all.

"If you're Hispanic," says Hess, "you call up a Spanish soundtrack—listen." She produces the "Free at last" speech. King's "Thank God Almighty" comes out "*Grandios Todopoderoso.*" Impressive.

The options seem endless, and the examples here at NDL and elsewhere are many and varied. The United Auto Workers have an interactive training exhibit, and of course, museums are exploding with such devices—witness the array of them in the Castle's new Information Center.

Hess warns that the wonders of interactive video learning are still embryonic—"like using books right at the time printing was invented." Unlike books, however, these programs all work differently. "It's as though every time you pick up a book you have to figure out how to read this particular one—right to left? upside down? back to front? We need some standardization, but this is free enterprise, and the manufacturers are still competing for the best way."

A laser disk player, together with a computer, a monitor, and probably a printer, adds up. Hess says $5,000 should do it. That's at the time of this writing. Computers tend to go down in price after a few years. But my current almanac says that a year at Bennington College, in Vermont, costs $17,790 in tuition plus $3,760 for room and board. That cost will certainly rise. All the more reason that a "cottage university" via interactive video is worth a thought.

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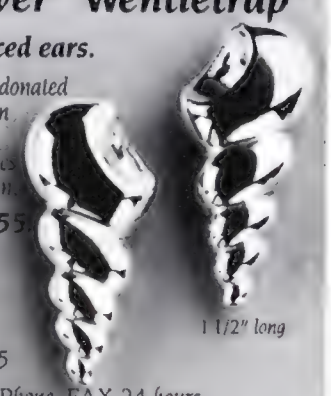

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Phenomena, comment and notes

No child in a candy store ever faced the temptations of an information addict working in a magazine office

Some addictions are embarrassingly obvious to the world at large as well as to ourselves. My little habit of sticking tubes of dead leaves in my mouth and then setting them on fire is not the brightest idea in the world, as earnest young doctors keep telling me after each heart attack, but at least I recognize the problem for what it is and struggle accordingly.

Now, however, taking stock as I teeter on the brink of geezerhood, other addictions—which may be just as difficult to give up, no matter how compelling the reasons—are becoming painfully apparent. Most glaring is information addiction, characterized by the uncontrollable urge to read anything printed. This can mean risking an accident trying to make out the bumper sticker on the car ahead on a rainy night, or spending the rent in a dusty old used-book store. It can mean devouring a magazine on service-station management while waiting for an oil change or picking up newspapers from the floor on the subway.

Letting an information addict work at a magazine is like giving a compulsive gambler a desk on the main floor of a casino. Life becomes letters, proposals, manuscripts, galleys, page proofs, story lists, assignment lists and, in this imperfect world, lists of deadlines. The mail brings piles of news releases; clippings from around the country arrive from colleagues, writers, friends, daughters, sisters. All this is only the core curriculum, however; it is the bulging catalog of elective delights that does the damage.

Temptation is built into the system. Every so often there appears on our desks a list many pages long of all the magazines, journals and newsletters our magazine subscribes to. All we have to do is check the ones we want routed to us. Using the last of my dwindling willpower, I limit myself to the top 40. Naturally I pick those in general science, chemistry, biology, physics, astronomy, oceanography, medicine, wildlife, conservation and animal rights. A few more, say *Vanity Fair* and *Sports Illustrated*, are thrown in just for fun. Every couple of days some poor devil from our Service Center comes staggering up the stairs with another armload. I flip, I scan, and all too often stop to read items that have not the slightest connection to work or anything else. It's like going into an encyclopedia with one specific question and being seduced by the surrounding entries. An hour, even half a day can vanish.

Then the devil appears in the guise of the *Book reviews* editor, who passes out new books—according to our specific interests—that have come in from publishers. Well, one has to at least look at them, after all.

At home, it's more magazines, newspapers, organization newsletters. And then, for a person coming very late to this age of electronic wonders, there is the brave new world of cable television, with 24-hour news channels and two public affairs networks. In the car there are all-news radio stations. One can feel like a poor man's Secretary of State, up to the minute at all times.

It would be nice to say that I soak up all this information with a photographic memory. But that would be felony lying. It is far more likely that when a topic comes up in conversation, I jump in with an "Oh, yes, I just read something about that someplace. . ." and then lapse into terminal silence.

The problem is more than progressive memory loss, even though I now routinely walk into the next room and then cannot remember what I came for. It is an addiction to facts, to information, to what are now called factoids, isolated bits that exist like single stars in the sky, unconnected to anything else. This kind of addiction can be a form of escapism, not only from the chores of the moment but also from the much more difficult acquisition of knowledge and understanding.

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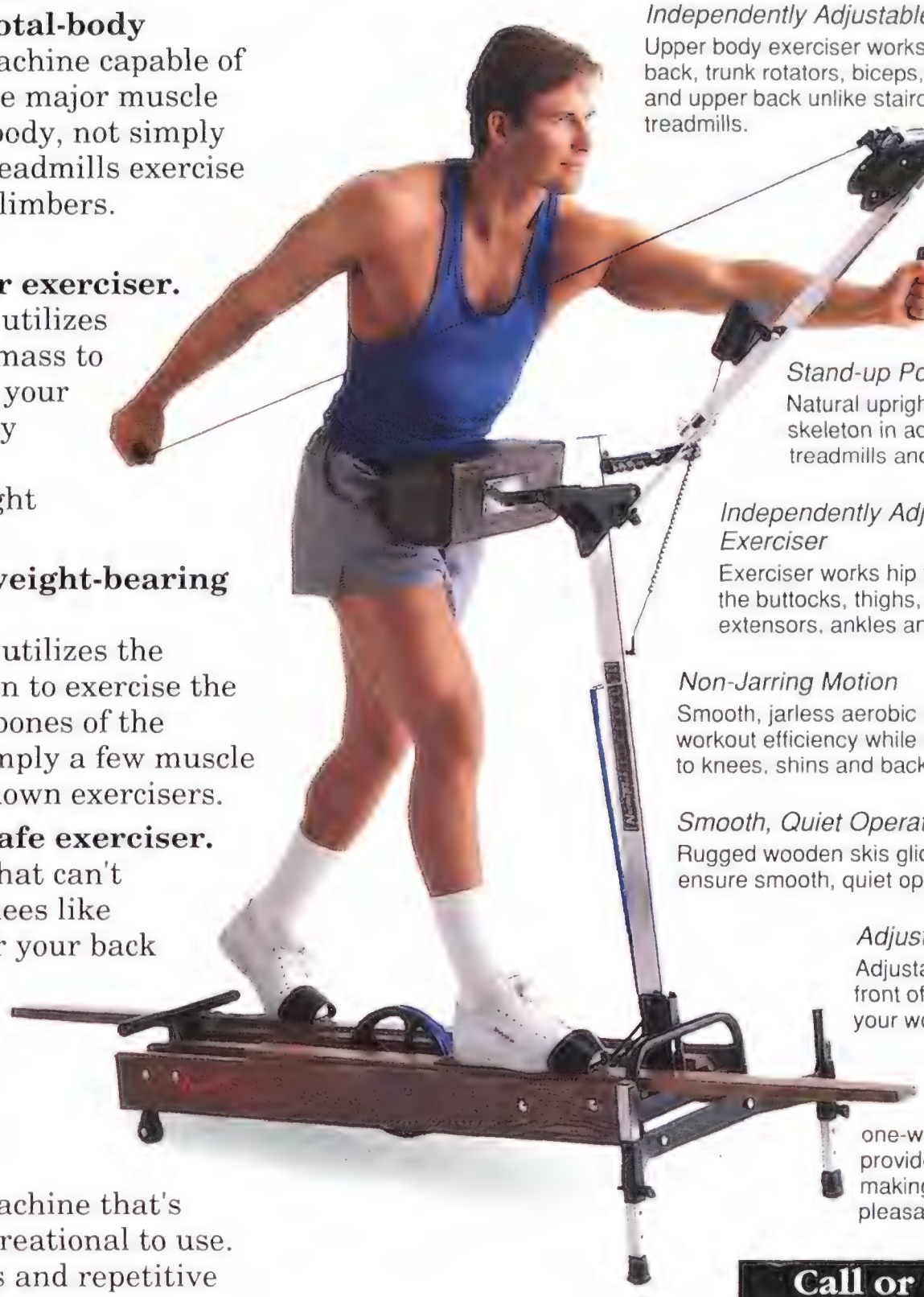

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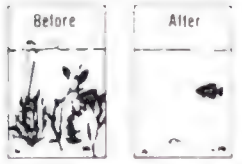

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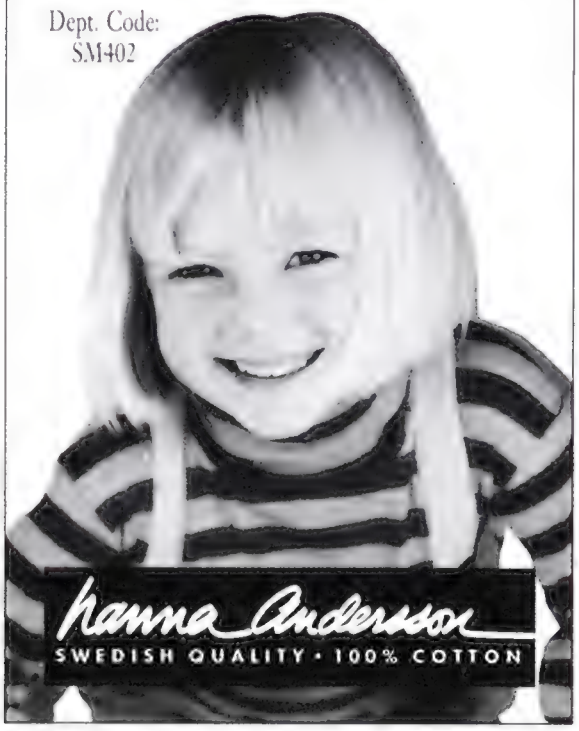

In other words, I read for hours every day, and yet in an older, deeper sense I don't read at all. Every year, you see, it gets more difficult to actually sit down and read a book.

It's not for want of trying. For years I have lived the fiction of reading before going to sleep at night. I pick up the book with the best of intentions, open where it is marked from the night before, and commence. The narrative flow comes back to me and I forge ahead . . . for two and even three pages. Then sleepiness descends as the darkness did earlier, and there is hardly time to slide the marker back in and close the book. After some weeks it becomes more and more difficult to pick up the flow, and the book sits there with a marker about a third of the way through. After some months a stack has accrued on the nightstand, each with a marker on the short side of halfway.

Weekends make better sense, but sitting there reading a book on a Saturday or Sunday when chores and errands are preying on your conscience is an exercise in mind over mind. When what you want most is to get outside, staying in with a good book seems downright unhealthy. (February's lengthening days and warming sun have me out tramping the woods looking for spring like a man wandering a city in hopes of finding his true love.) And so the months go by: lots of dipping but no books read.

It is awkward to realize that one is guilty of the sin one has been sneering at in other people. It is easy, and makes one feel deliciously superior, to mock the sound bites of television news, or a national newspaper that limits even major stories to eight paragraphs. And then one realizes that eight paragraphs is not that far from one's own reading capacity. It is not just those other people who read short. To borrow from the environmentalists their adopted Pogo, Walt Kelly's prescient possum: "We have met the enemy and they is us."

These thoughts are triggered by the lead article in the January *Atlantic.* Douglas L. Wilson, professor of English at Knox College in Galesburg, Illinois, compares the reading habits of Thomas Jefferson and Abraham Lincoln. As soon as I saw it, I knew I would be forced to confront what it really means to be a reader. Both men were insatiable readers in childhood, Wilson writes. Jefferson had all the advantages: a home library, formal schooling, even

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two years of college. He meant to become a learned man, and did so. Lincoln borrowed books to raise himself from his backwoods beginnings, and did so and then some.

Jefferson read all his life, putting together magnificent libraries in the process. "A patient pursuit of facts, and cautious combination and comparison of them," he is quoted, "is the drudgery to which man is subjected by his Maker, if he wishes to attain sure knowledge." Lincoln appears to have read much less as an adult, but Shakespeare, according to his law partner, "was scarcely ever out of his mind and his hands."

We value both men, Professor Wilson concludes, "not only for what they did but for what they thought and said. The words and ideas that continue to challenge and inspire us are undoubtedly the ripened fruit of experience, but in the case of both men we do well to remember that it was an experience of which reading . . . was an indispensable part."

It appears that the only way to get back to "real" reading, aside from applying strength of character (which I'll have to fake), is to reclaim some of the time now frittered away in the indiscriminate gleaning of factoids. It probably will not be any easier to give up that grazing than it is to forswear the dead leaves. But there are rewards, some obvious and some less so. As Margaret R. Miles wrote in *Fullness of Life*, a book on asceticism today, after noting that the old tradition of occasional fasting is not a bad idea:

"Another kind of fasting whose usefulness is unambiguous is fasting from the media. The perspective we gain by temporarily stopping the constant barrage of words and images in the media shows us to what extent our consciousness is shaped and governed by external manipulation of our attention."

Miles is probably right, although I won't know until I get up the nerve to try her prescription. Exceptions would have to be made. Life without the comics, which nowadays have some of the best social commentary anywhere, is not thinkable. The same is true of *New Yorker* cartoons. Political cartoons are a must for any responsible citizen.

After that, however, the prospect of having several hours magically added to the day does have its attractions. The question is how this time will be used. On froth? Or can I become one of those heroic figures occasionally seen on the subway or in cafeterias, working away at some thick, dark-bound tome?

Jefferson and Lincoln lived in disadvantaged times: not only was 24-hour-a-day news undreamed of, but the techno-thriller and the Hollywood biography had yet to be invented. They made do with what we used to call "classics" before the word was appropriated for the first year of a new golf tournament. And, as Wilson says, it showed in their prose.

The whole business is like being told that if you get up an hour earlier and run five miles every morning, you will have more energy at work. The rational minority of the mind nods assent: "What a splendid idea!" The governing coalition, however, points out that a freezing rain is falling, that knees and feet are calling in with unfamiliar pains, and that an extra hour's sleep would be insurance against the flu. On the outcome of the debate depends the future of our own prose, our thought, our lives.

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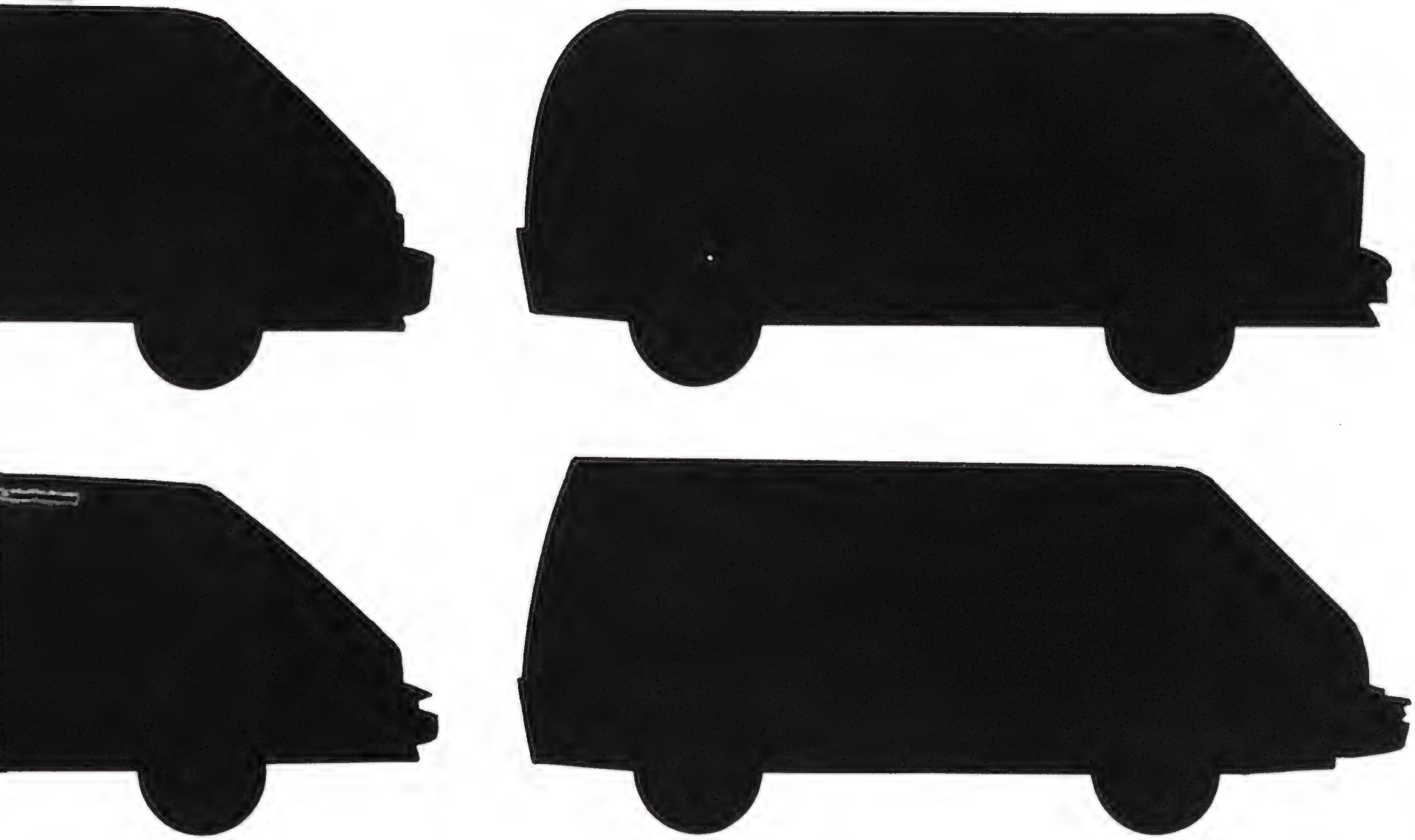


*Outboard seats. †Protects engine, powertrain and covers outerbody rust-through. See limited warranty at dealer. Restrictions apply. **Buckle up for safety!** © Plymouth/Chrysler Motors, 1990

By Baird Straughan

The secrets of ancient Tiwanaku are benefiting today's Bolivia

Alan Kolata and Oswaldo Rivera have helped campesinos in the altiplano raise bumper crops by adopting the methods of their ancestors

In 1987, Roberto Cruz didn't know his ancestors had built a civilization that lasted for nearly a thousand years. If you had told him their capital had been the nearby town of Tiwanaku, or that new research indicates they exercised control over a vast territory from Peru to Argentina, from the Pacific to the eastern slope of the Andes, he probably wouldn't have cared.

Cruz, an Aymara Indian living at 12,500 feet near the southern shores of Lake Titicaca in Bolivia, had enough trouble just surviving. His lands on the lake's floodplain, the Pampa Koani, were useless. Frosts there killed the crops, and boggy conditions rotted potatoes in the ground. His small fields on the hillside were exhausted, and he had no time to think about "the grandfathers," as he calls them.

That was before they reached out from the centuries and touched his life. They reached him through two outsiders whom Cruz met one day in 1987 walking across the pampa, over the strange pattern of parallel ridges and depressions that stretches for miles across the floodplain. He knew that they had been working for years among the ancient ruins nearby. But the two men told him some things he found hard to believe: that a thousand years ago his boggy lands had been fertile; that the ridges and depressions were the remains of a system of raised planting surfaces separated by canals; that if he redug the canals, the raised fields would produce again.

Cruz called together his neighbors. Could this be true? No, the Aymara concluded, the strangers probably just wanted to steal the land. No, they would continue farming the hillsides, where they had been as long as anybody could remember. The frosts were milder there. But Cruz was curious. He told the two they could redig the canals on his lowland fields.

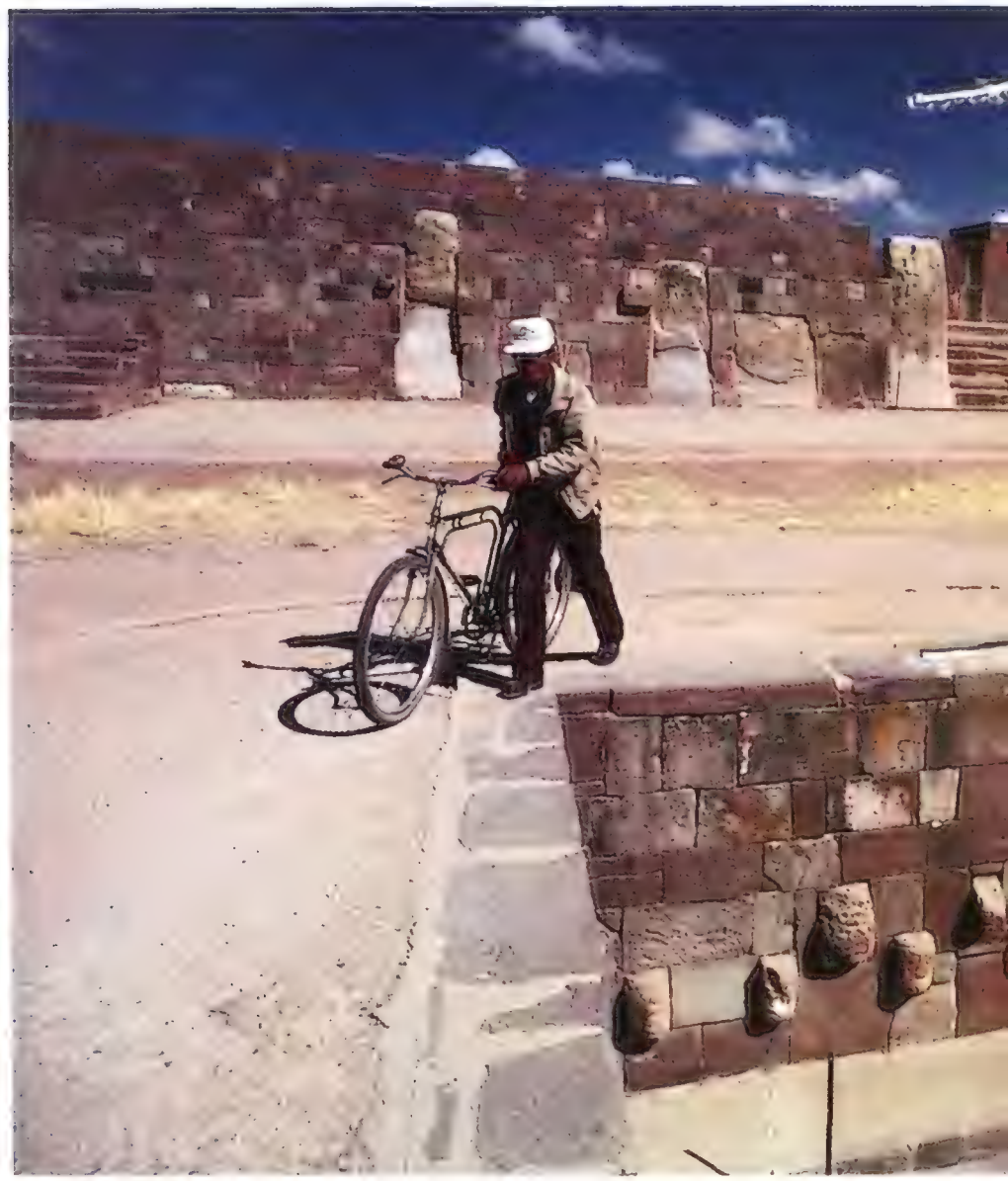
His neighbors were incensed. They called him to a meeting, and when he wouldn't go willingly, they trapped him, gathered the villagers and castigated him. Outsiders were bad luck, digging up "virgin earth that had never seen the light of the sun." That disturbed the weather. It was why the region was suffering a severe drought. Thanks to Cruz, they said, the whole town would starve. They threatened banishment.

Cruz wouldn't back down. He planted a crop on the raised platforms between the canals and watched his potato plants grow taller than he'd ever seen. Then, just before harvest, came his worst fear—frost. That whole night the villagers stood watch in their fields,

The granite stela opposite, which may represent a Tiwanaku priest, overlooks the ceremonial city. Roberto Cruz (center), his son and wife cultivate potatoes in their raised field bordered by canals.

Photographs by Wolfgang Schüler

Alan Kolata and foreman César Calisaya are framed by entry to Kalasasaya, one of the major temples.



Cruz with them. By early morning 90 percent of the crop on the hillsides was lost. Cruz walked down toward his fields on the pampa, knowing he'd made a terrible mistake. He could feel the coldest air flowing downhill to gather on the floodplain, where it would kill everything. The community had been right. The strangers had tricked him.

But when Cruz arrived at his land he saw with surprise that a mist had formed over it, a low white cloud that covered his fields "like a blanket." It lasted until the first rays of the morning sun, then vanished. Cruz walked out onto the platforms and was amazed to find his plants virtually undamaged.

Shortly thereafter he took in a record harvest. Today the edge of the Pampa Koani near Cruz's home is lined with raised fields dug by his neighbors. Cruz is a respected member of the community again.

He still thinks back to that one particularly bitter frost, and how his crop was miraculously saved. In fact, he now knows that what he saw rising from his fields that freezing night was the genius of Tiwanaku, a powerful state built by some of the greatest hydrologists the world had ever known.

The altiplano gets a great deal of heat from the sun during the day, but at night that heat escapes from the soil. Because the canals, which make up about 30 percent of the surface area, retain heat, they remain at

Central relief on Puerta del Sol may be sun or weather deity; frieze around it is thought to be a calendar.

Sculptural heads on the wall of a partially sunken temple could be vanquished foe or trading partners.

least tepid and create a large temperature gradient. Water begins to evaporate and produces a fine mist that covers the fields, creating an artificial microclimate. In addition to the fog blanket, water drawn up into the soil platform by capillary action conducts heat to the plants' root systems.

One of the outsiders Roberto Cruz met on the pampa in 1987 was Alan Kolata, who is a professor of archaeology and anthropology at the University of Chicago. He had come to Tiwanaku in 1978 through "a bit of serendipity," as he puts it. Given the opportunity to collaborate on a new archaeological project in Bolivia shortly after receiving his doctorate from Harvard, he flew to La Paz and was met by Oswaldo Rivera, a rising archaeologist from Bolivia's National Institute of Archaeology. Robert West, chairman of the board of Tesoro Petroleum Company of San Antonio, was setting up the Tiwanaku Archaeological Foundation to explore the ruins of the pre-Inca civilization on the altiplano bordering Lake Titicaca. Kolata and Rivera were to be in charge of it. "Dr. West has generously supported the project—and our work—with research funds ever since," Kolata says.

He began by surveying the Akapana Pyramid, Tiwanaku's most sacred temple. For the next four years the two archaeologists concentrated on excavation, finding fragments of Tiwanaku pottery and other

Tiwanaku map shows areas of historic raised fields; so far only a few of these have been reconstructed.

Oswaldo Rivera gestures to describe how to prune onion plants to produce bigger bulbs in raised beds.

Lush planting platforms separated by canals are sharp contrast to unexcavated remains of ancient fields.

artifacts among the ruins of the ancient city or on the nearby Pampa Koani.

A pattern of ridges and depressions on the floodplain intrigued them. They knew that similar topography had been reconstructed into raised fields and irrigation canals in Maya and Aztec jungle areas of Central America. Could it be done here?

Soon after beginning their collaboration, Kolata and Rivera identified 43 square miles that were the remains of raised fields separated by interconnected irrigation canals linked to the Katari River. They were beginning to suspect that Tiwanaku had been a far larger civilization than had been thought, one that would have needed excess crop yields to sustain conquests, crafts, a complex social hierarchy. But Western agronomists consider the altiplano at best marginal land, beset as it is by frequent frosts and exhausted soils.

Could the ancient Tiwanakans have succeeded where modern mechanized agriculture has failed? Would these fields have produced enough to sustain such a civilization? Kolata and Rivera decided there was only one way to find out: rehabilitate a field and plant a crop. A similar project, led by a colleague, Clark Erickson of the University of Pennsylvania, was beginning across the lake in Peru.

In 1981, long before they met Cruz, they approached the community of Lacaya. Their presentation was well received. But as did the people of Cruz's village of Chokara several years later, the Lacayans soon blamed Kolata and Rivera for the severe drought. On one occasion campesinos stoned the two. "We were lucky to escape," Kolata recalls. It was not until 1987 that the reclamation project was back on track, first with Cruz and then at Lacaya. "We received major funding from the Inter-American Foundation. We put a lot of people to work and reintroduced the concept."

In April 1988, as Cruz was confounding his neighbors with his success, the first crop in the Lacaya fields yielded 20 metric tons of potatoes per hectare (about 2.5 acres); some were the size of grapefruit. It was seven times the average altiplano yield. There were also good crops of quinoa (a local grain), barley, oats, and vegetables such as lettuce and onions. Based on these yields, Kolata estimates that the Pampa Koani alone could have fed half a million people.

The new technique yielded another dividend: algae and aquatic plants began to grow, and with them, colonies of nitrogen-fixing bacteria. In several months a thick ooze formed at the bottom of the canals. When the harvest was in, the campesinos drained the canals and shoveled excellent organic fertilizer onto their fields.

There has been a complete turnabout in the reception the archaeologists receive. Kolata is now a welcome figure on the southern shores of Lake Titicaca. Clad in jeans and cowboy boots, his lanky 6-foot-2-inch frame towers above the Aymara, short people with broad torsos that house lungs big enough to cope with the thin air. Despite his appearance, he is completely at home among the campesinos in the fields or supervis-

Llamas survived extinction of Tiwanaku culture, now roam ruins of the ancient city, to delight of tourists.

ing the careful work of uncovering the secrets of the once glorious city called, according to legend, Taypi Kala, "The Stone in the Center."

A traveler who reached Tiwanaku, or Taypi Kala, at its height, around the seventh century A.D., would have come over the surrounding hills and been dazzled by the shining city, aglow with sunlight reflecting from gold-covered sculptural bas-reliefs on the walls of three major temples, all of them facing the rising sun.

A city of 50,000, it was situated on an ancient lake terrace that rose a few feet above a plain. Its ceremonial core, containing temples and the brightly painted palaces of the upper class, occupied almost a square mile, with the commoners sprinkled about the remaining three square miles. Of the major temples, the Akapana and Puma Punku were religious sites; Kolata believes the Kalasasaya to have been the seat of Tiwanaku's rulers. He also believes the state was basically a two-class society, an elite composed of the ruling class, its court and lesser nobility, with the rest being commoners. The discovery of bits of worked gold, obsidian and lapis lazuli in the royal sewer, and metalsmith's and lapidary's tools in the palace, indicates that the royal families may have been skilled craftsmen who fashioned the symbols of their own power.

The traveler might have been most likely to see the royalty on festival days. Sculpture and pottery show them emerging from their doorways, costumed as condors or pumas, or as highly stylized deities with enormous headdresses and capes. From the men's belts hung sacrificial knives and the trophy heads of their victims.

Human sacrifice was apparently a part of the celebrations. During these rituals, some archaeologists believe, the priests were under the influence of powerful hallucinogenic drugs, probably derivatives of cacti and other plants.

As in most ancient agrarian civilizations, the emperor-priest was responsible for propitiating the gods and assuring their blessing of the harvest. Guaranteeing an abundant crop isn't easy under the harsh conditions of the altiplano, but Tiwanaku's rulers apparently managed it for about 800 years. Clearly, they provided their subjects with a better diet than most Bolivians have today. The commoners subsisted on quinoa, potatoes and fish. Royalty and the nobility dined on llama and corn, the latter a luxury probably imported from colonies or trading partners at lower altitudes. The upper class had regular access to coca leaves from the high valleys of the Amazon, possibly ocean fish from the Pacific coast of Chile, and peppers from southern Peru.

Gold-hungry Spaniards, who arrived in Tiwanaku in the 16th century, found the remains of a culture that had endured from around A.D. 200 to 1000. It had left no written records and was barely remembered by the peasant farmers, who believed that the

Baird Straughan reports for radio from La Paz, writes about Latin American politics and works on behalf of the burgeoning environmental movement in Bolivia.

Potato blossom festival is marked by ritual dousing, with cane alcohol, of rock candy, coca leaves, a llama fetus. The offering is then burned on a dung fire to seek divine intercession for a bountiful harvest.

gigantic stones of the ruins "existed before the sun shone in the heavens." Monuments had already suffered pillage for centuries, but nothing compared to that visited upon them by the conquistadores. Precious metal ornaments were stripped, statues defaced, tombs looted. The invaders rooted to the bottom of the Akapana, destroying a large part of it and heaping debris on the rest. Much of the stone they threw aside was later used to construct railroad bridges or buildings in nearby La Paz.

When American archaeologist E. George Squier came to the barren valley, inhabited by a few thousand impoverished farmers, in the 1860s, he described the Akapana as "a great rectangular mound of earth, originally terraced." Around it, partially buried, were the scattered remains of other large edifices.

Squier could see that the original temples had been stupendous constructions, made of blocks ranging up to 160 tons, probably transported from quarries across Lake Titicaca and then precision-fitted together. But he could find no evidence of the society that built them: no remains of domestic dwellings, no evidence of a substantial population base, no conceivable source of sustenance for a major civilization. He concluded, "Tiahuanuco may have been a sacred spot or shrine . . . but I can hardly believe that it was the seat of a dominion." Such reasoning was implicit in the work that followed.

It was a Bolivian archaeologist, Carlos Ponce, who in the 1950s began to provide evidence that Tiwanaku had been a great capital. Alan Kolata's painstaking work reinforces the premise that it was the center of a powerful state, and his conclusions are now receiving careful scrutiny.

David Browman, of Washington University in St. Louis, believes Tiwanaku was "the dominant member of a religious and trading federation." Browman goes on to say that the guerrilla activities of the terrorist group Sendero Luminoso are making it impossible to work in central and northern Peru, where many of his colleagues always believed the most important civilizations were located. "Now, there is a lot of re-

search being done in southern Peru and Bolivia and northern Chile and Argentina, the areas that came under Tiwanaku's influence. There will be real changes in our vision of Tiwanaku quite soon."

Many of the new discoveries will come from Alan Kolata's excavations. Kolata, his colleagues and students work closely with crews of Aymara, whom they have trained in the precise discipline of excavating and recovering artifacts. The Aymara speak fondly of "*el Doctor*," who not only pays their wages but also drinks beer with them and sponsors their soccer teams.

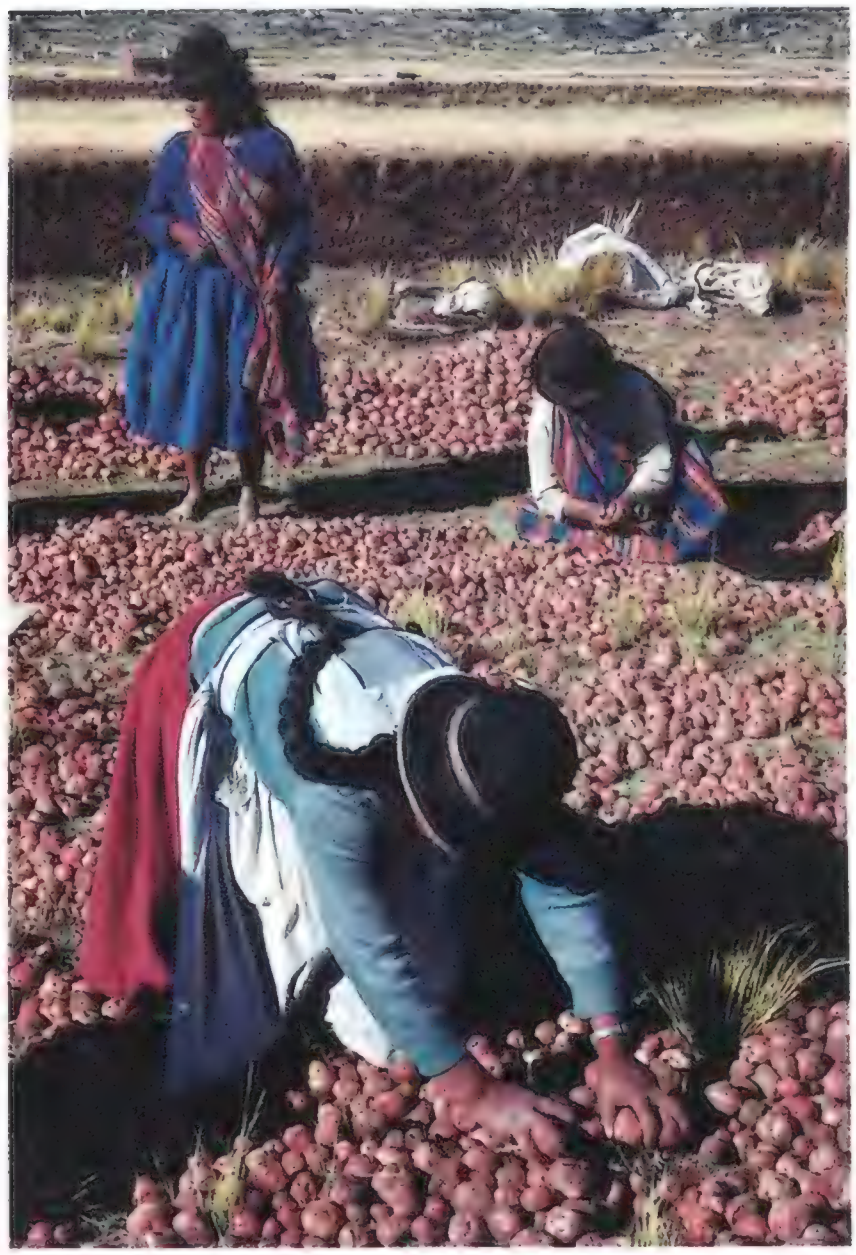
The work force, consisting of Aymara excavators and about a dozen graduate students from the United States and Bolivia, is doing broad horizontal excavation, going down level by level over large areas to diagram domestic life in Tiwanaku.

Recovering Tiwanaku's daily life

Kolata belongs to the school of archaeology that finds the daily life of ancient peoples as fascinating as their monuments. Through advanced scientific techniques, he and his colleagues have been able to draw conclusions about Tiwanaku's social organization, and even about the diet of the average citizen. Graduate student Michael Marchbanks, back in his laboratory at the University of Wisconsin, is examining tiny samples of clay from the cooking pots and, through chemical tests, determining what foods the Tiwanakans ate. A team of limnologists is analyzing core sediment from Lake Titicaca, which contains layers of runoff from Tiwanaku's raised fields, to document past agricultural activity. Hydrologist Charles Ortloff is building computer models of Tiwanaku's water systems to see why they worked so well.

Kolata has not finished his interpretation of the results of all the combined research, to be published as a monograph by the Smithsonian Institution Press. But even the brief sketch he can give now is impressive.

On a walk around the temple complex, Kolata talks with respect of the Aymara, and with unreserved wonder at the achievements of their ancestors, "for instance, the drainage system of the Akapana." He points to the largest of Tiwanaku's structures, a 50-foot truncated pyramid with seven terraced levels, now emerging from the debris heaped upon it by the Spaniards. On the top, priests' residences surrounded a huge sunken court with a pool that collected tremendous amounts of water during the rainy season. The water flowed down inside the Akapana, gushed out onto the first terrace, flowed back into the temple, then out onto the next terrace and so on until it coursed from the bottom into a gigantic moat surrounding the ceremonial core. "The running water would have set up an acoustic effect, a roaring sound from within the struc-



Aymara women select potatoes that are free of fungus and other diseases to use as seed for next planting.

Jubilant villagers of Kusijata weigh newly harvested potatoes from the first crop in their raised fields.

ture," Kolata says. "It's pure virtuosity." And the moat would have made the ceremonial core a symbolic island, in obeisance to the sacred Island of the Sun in nearby Lake Titicaca.

The Akapana was designed to mimic the Quimsachata, a sacred mountain range with spouting and retreating torrents of rain and springwater, representing a life-giving cycle, flowing, evaporating and falling again as rain.

Kolata seems particularly intrigued by the royal sewer of the central city. Channels beneath the palace floors merge into a massive rectangular conduit built of sandstone blocks a yard square, held together with copper clamps—a technique used in ancient Greece and Rome but heretofore unknown in the Americas. The sewer was buried nine feet deep in impermeable red clay. "It functioned for around 500 years," he explains. "It maintains a 3-percent grade all the way down to the river, a half-mile away."

University of Chicago students sift and inspect the excavation debris, and map the site features at Putuni.

Alan Kolata sets out over the ancient lake terrace on which the city was built. Underfoot, the ground is littered with pottery sherds, "virtually all from Tiwanaku." Here, the researchers are coming up with some of their biggest finds—the remains of Tiwanaku's domestic structures, precisely what Squier and other archaeologists thought were lacking. Kolata's excavations have uncovered the foundations of what were tightly spaced adobe houses, layer upon layer throughout generations. Most of last season's work was in these residential areas, but what is thought to be part of the city's external wall came to light, as well as the remains of what seems to have been a ceramics factory.

So massive an agricultural system as Tiwanaku's would have had to be organized on a regional scale and would have required the support of a powerful, centralized state. One evidence of the existence of such a state is the large mounds in the center of the fields. Ashlar architectural remains, decorated pottery and indications of a varied diet point to them as homes for local overseers who monitored field production. These mounds were connected to one another, to the villages and cities, and to smaller mounds by a network of causeways. The small mounds, mere bulges at the ends of raised fields, supported simple adobe huts that were seasonal homes for the *kamani*, or field guardians, who protected ripening crops from predators.

It had been necessary to divert the river about a mile to the north of the center of the pampa to open up the land for raised-field production. To control flooding, the river was secured by a huge berm, or levee. Kolata and his colleagues estimate that excavation, diversion and construction were a gigantic public works project of at least one million man-days' labor.

A legacy from "the grandfathers"

Harvests such as those now being reaped on Tiwanaku's ancestral fields give hope for the future. About 1,200 campesinos are using raised fields. Oswaldo Rivera, who is now director of the National Institute of Archaeology, has requests for assistance from another 50 villages eager to apply the same principle. Some units of the Bolivian Army have begun a Plan Verde (Green Plan), teaching conscripts the raised-field technology. And the Bolivian government is looking for $40 million to spread the technique throughout the country. Large-scale development projects have a bad record in Bolivia, but if the government is successful in this one it would be in a better position to confront the country's burgeoning problems.

Where the hot dog was invented

Long before there was Disneyland, there was Coney Island; and it was internationally famous as the world's greatest center for fun. On Sundays in summer, half a million visitors would make "Coney" the most densely populated place on earth.

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In 1990 Kolata found these lapis lazuli beads, copper bracelets, gold chest plate, in tomb of an elite woman.

Season also yielded ceramic puma incense burner from A.D. 400-800; pumas, condors and llamas were sacred.

U.S. Ambassador Robert Gelbard, an enthusiastic supporter of and fundraiser for the project, urges that it be expanded as quickly as possible. "We are finding that nutritional levels have improved dramatically in these areas," he explains, "and not just because of the potato harvest. There are fish in the canals, the ducks lay eggs—protein levels have gone up considerably."

The potential benefits for Bolivia are tremendous. Chronic malnutrition afflicts nearly half of all Bolivian children, and the country must import food even though most of its citizens work in agriculture. Large numbers of farmers are abandoning their exhausted land on the altiplano and migrating to the Amazon basin, where they can grow coca or clear new farms in the rain forest by the slash-and-burn method.

Meanwhile, archaeological support is coming from another direction. The Getty Conservation Institute of Los Angeles is working with Bolivia's National Institute of Archaeology to devise plans for protection of ancient Tiwanaku's ruins from both environmental hazards and increased tourism.

Kolata ponders the most perplexing question still hanging over Tiwanaku: why it ended. "It was so good for so long, why did it collapse? We know that by A.D. 1000 the fields were no longer functional."

He has a possible answer. Ice cores from glaciers in southern Peru and sediment cores from Lake Titicaca indicate that sometime around the millennium the area suffered a severe drought lasting for decades. Rivers and underground springs watering the raised beds would have dried up, disrupting agricultural production. It is unlikely the Tiwanakans had enough provisions to withstand so prolonged a catastrophe. Starvation would have been widespread and most likely have led to the collapse of the government and its highly organized agricultural system. At present, this is just Kolata's hypothesis. But in the absence of historical records, paleoclimatological data may be the best evidence we have.

In any case, after A.D. 1000, Andean peoples moved to the hillsides, where they practiced the kind of terrace agriculture we associate with the later Inca civilization. The raised fields were abandoned and eventually forgotten. But luckily for the inhabitants of the Bolivian altiplano, Kolata and Rivera are now resurrecting them.

"The good thing about the system," according to Kolata, "is that it functions almost anywhere there's a secure source of water." As to the archaeologists' role, he says simply, "We're only giving back to the Aymara what their ancestors developed thousands of years ago."

Portrait vessel's haughty expression, with a plug below his lip, indicates subject was from upper class.

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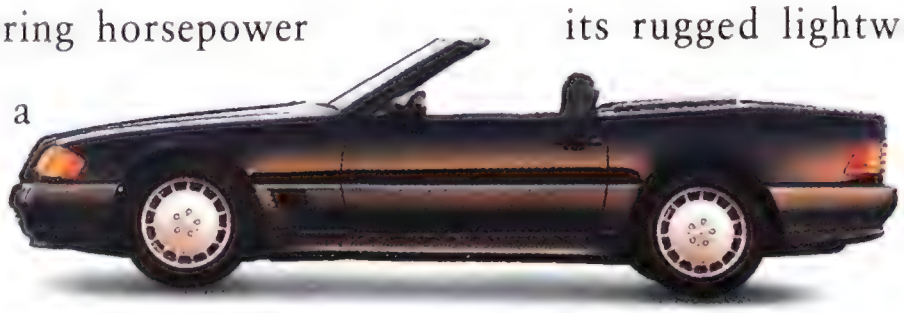

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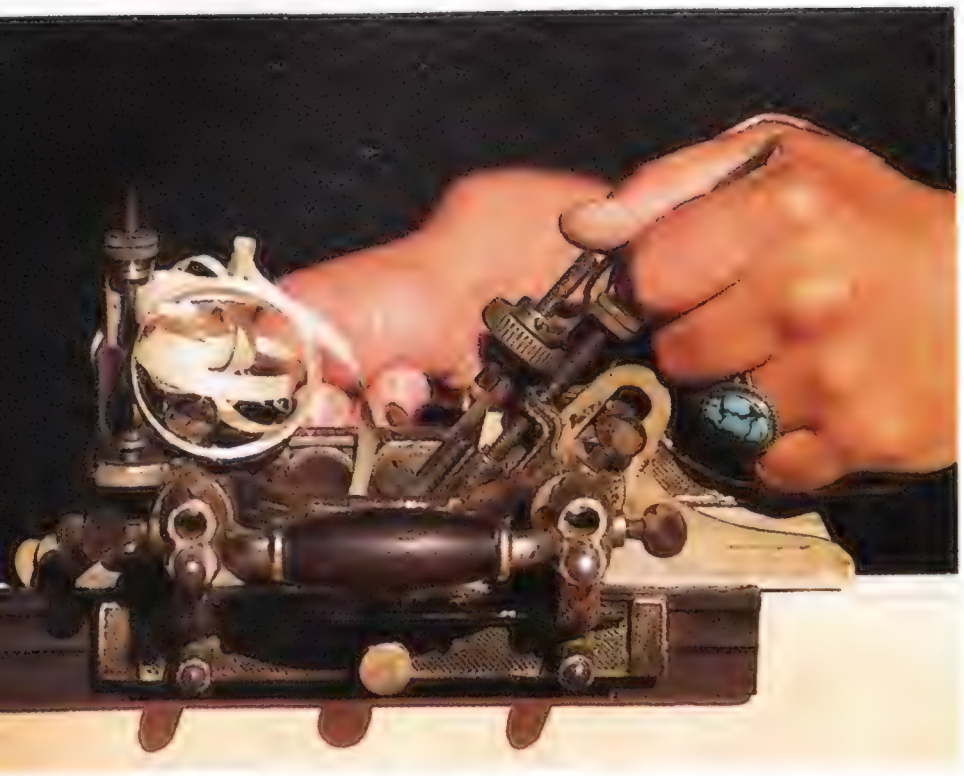
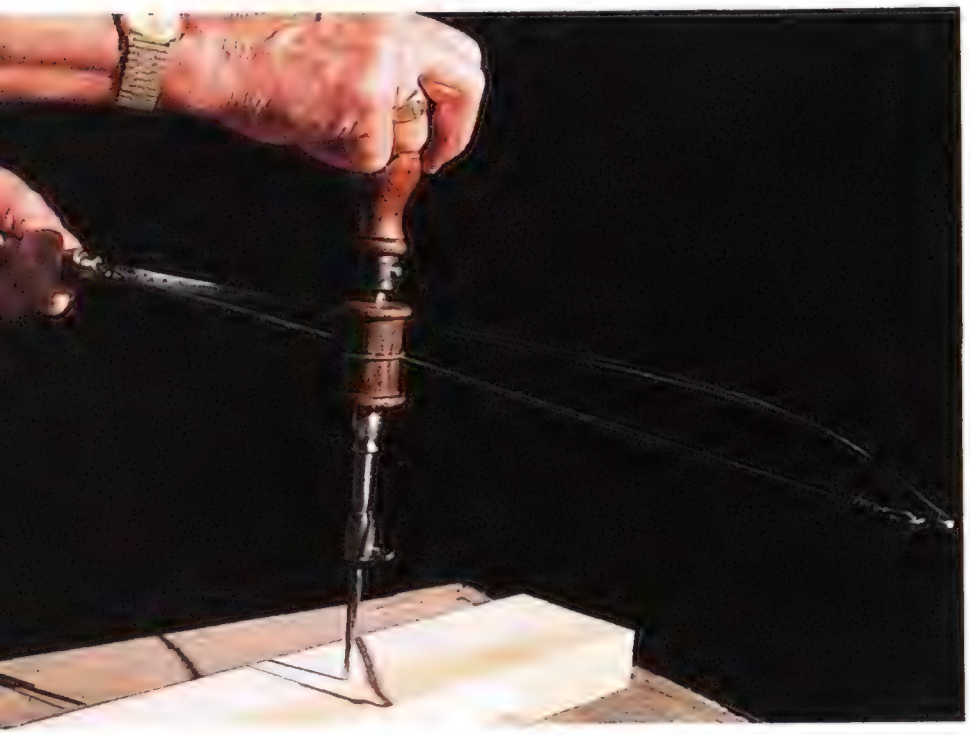


In the hands of New Mexican Scot Carlson, 90-year-old Stanley 55 plane finely crafts picture frames.



"Played" like a violin, this rare French bow drill from the 19th century grinds its bit into wood.

Still life at one collector's workbench features animal-hide-glue pot, planes, candy scale, wooden mallet.

By John Neary

When rules and drills drive you just plane screwy

For those who amass huge stockpiles of old tools, the quest for a perfect 'Our Very Best' oilcan is almost as fun (but not quite) as making the deal

The Rocky Mountain Tool Collectors, gathered for their annual board meeting, were tackling the grave problem of what to do about the unseemly way new widows were being hustled by the treasure-seeking buddies of recently departed spouses.

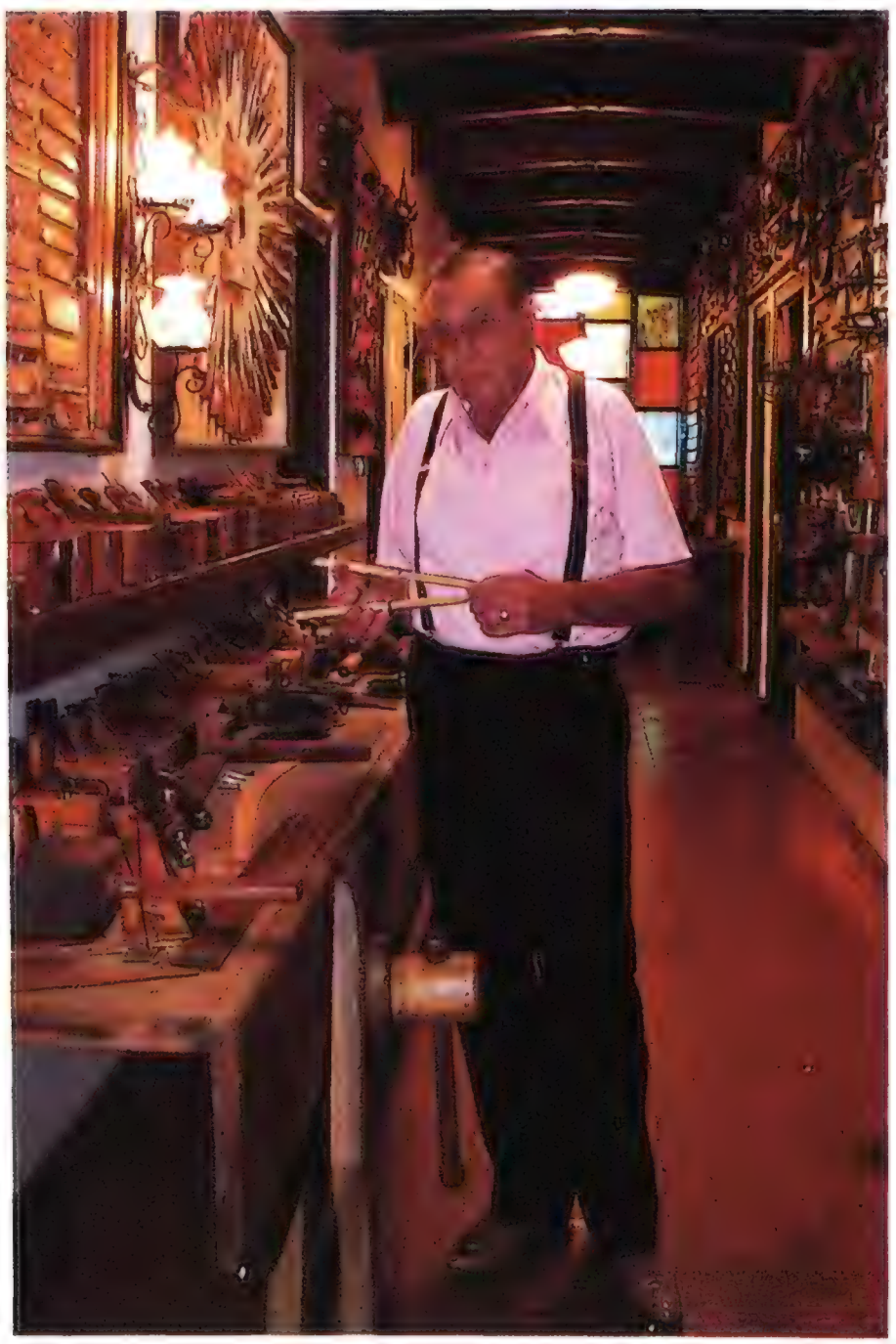
"One member wasn't even buried before one of the members went running over to see if he couldn't help the wife dispose of the stuff," said Ernie Blumenthal, a collector of fine wooden rules and plumb bobs, and a respected dealer who is one of the vice presidents of the much-larger Midwest Tool Collectors Association. "Of course, he wanted this, this and this—and he'd give her so much. She was smart enough to wait. The man was barely dead and one of his best friends was rushing over there to try to raid the collection!"

No small part of the problem, further discussion revealed, was finding advisers who would be impartial, objective, knowledgeable—and willing to suspend their own acquisitive urges.

Unloading a truly active tool collector's treasures can be a massive project. It took two days, for example, for a prospective bidder just to survey the contents of one collection in Connecticut recently. Most of the bidders found it possible to examine the trove—which included

Photographs by Eduardo Fuss

George Mayhew's replica Hammacher Schlemmer gent's tool cabinet is stocked with original inventory.



At home with his collection, avid tool buff William McDougall displays $400 rule he got for 50 cents.

tens of thousands of hammers heaped on cargo pallets—in that amount of time only by touring through it aboard golf carts.

Not all collectors, of course, assemble such a pile. Don Stevenson, up in Woodland, Washington, has limited himself to just 5,000 hammers. So far, that is. And Ron Baird and Dan Comerford have a mere 3,000 hammers. Each.

When a hammer flies off the handle

Baird, a Missouri veterinarian, and Comerford, a school administrator in New York, love hammers so much that they collaborated on a book that contains photographs of hundreds of the specialized hammers that carpenters, blacksmiths, coopers, stonemasons and other artisans have demanded over the centuries. The result is a sort of Peterson's field guide to hammers—a tool itself in building collections, and in winning the endless debates that roil whenever tool collectors meet.

Comerford got into hammers while restoring his 160-year-old house on Long Island. He happened to find two of them, left inside the walls by some absent-minded carpenter. They were made by an American blacksmith, David Maydole, whose company forged hammers from 1843 until the Depression. Maydole is credited with achieving one of the few advances in hammers since Roman times (Comerford now has three hammers from the days of the empire) by forging an "adz-eye" socket deeper into the head and adding a neck, to lock it onto the handle. Before that, hammers often had a pesky—and dangerous—tendency to fly off the handle at the apogee of the swing. Like many hammer collectors, Comerford is convinced that Maydole's adz-eye hammers "are the best that were ever made."

"I thought I was destined to collect hammers," Comerford says; "I became a storehouse of knowledge." In fact, he became president of the 3,500-member Early American Industries Association, which publishes reprints of old manufacturers' catalogs and a quarterly journal, and sponsors scholarly investigations.

Many collectors seem to have embarked on their missions as a result of such accidental encounters as those of Comerford and Baird; the latter took up tool collecting after seeing a collection mounted on a wall. Scot Carlson, of New Mexico, abandoned a career in anthropology, after seven years of graduate school and a PhD, to take up woodworking. The reason: his grandfather left him a Stanley 55, one of the most complex and versatile hand planes ever manufactured. Carlson felt an almost mystical tug to teach himself how to use the tool. Today, he owns hundreds of planes, constantly looks for more, and uses them daily to painstakingly craft exquisite molding and picture frames.

Chad Palmer, U.S. Marines Ret., shows a magnetic-faced high nailer to a prospective buyer. For some 42 weekends of the year, Palmer sets up his booth at the Santa Fe flea market; prices range from $1 to $500.

Destiny similarly touched retired construction supervisor William McDougall when, back in 1970, while visiting a friend in Colorado, he saw a collection of curling irons. The result: McDougall's Albuquerque home is a veritable museum of some 2,500 tools. In his driveway, a huge 700-pound anvil greets visitors. Inside, like bristling abstract sculptures, a gleaming array of planes, chisels, workbenches, braces and bits, levels and squares cram the polished floor and adorn the walls of the central hallway along most of its 70-foot length, glowing assemblages of wood and brass and steel. McDougall estimates he has spent about $50,000 in pursuit of old tools, and still looks for more. "But I've slowed down," he says. "I don't bring home the tonnage I used to."

Why does a person become so enthralled by what, after all, were merely the workaday implements of antiquated kinds of manual labor? McDougall, president of the Rocky Mountain Tool Collectors, says, "I think a lot of the history of our country is represented here." And there is the fun of the quest itself. McDougall recalls with zest the day he "bought a $400 folding rule for 50 cents because the guy didn't know what it was."

John Neary has 6 sledge hammers, 11 carpenter hammers, 24 blacksmith hammers, 2 broadaxes, 4 forges, 9 anvils and 15 vises, most of them minor.

Robert LeMunyon, a Santa Fe furniture and antique conservator, collects old tools, but he tries to be hard-nosed about it; they have to pay for themselves. He explains: "If I can use a tool, fine; I'll put it in my collection. But if it's just a wall hanger, forget it."

LeMunyon, who fixes old beauties—including a 19th-century chair worth hundreds despite the fact that its wormy wood makes it fit only for holding hats and coats in the hallway of some elegant Santa Fe casa—finds that his old tools are often the only ones for the job. "If I'm working on an old piece," he says, "I want the tool to match. I feel I've got more control with these tools. I don't make mistakes quite as fast."

Santa Fe blacksmith Frank Turley has taught forging for more than 20 years in his cavernous shop festooned with 19th-, 18th- and even some 17th-century hammers, swages, fullers, flatters, bob punches, hot cutters, hardies and tongs, still state-of-the-art im-

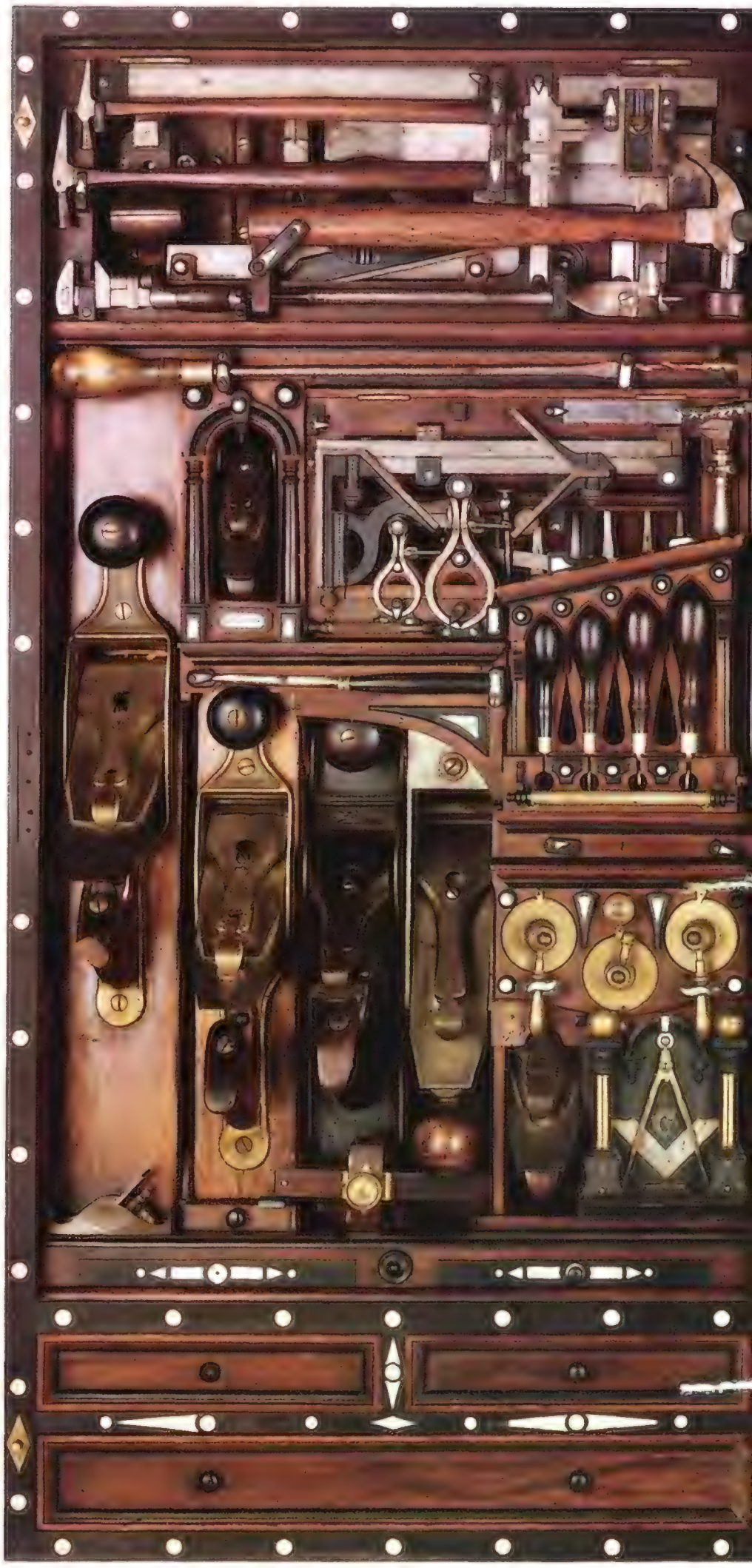
plements of his antique craft. "There is a psychological connection we have with tools," Turley says. "There is something warm about touching an old tool. It has a patina on it that's kind of nice. You get frigid when you touch a modern tool."

Bill Harper is a Santa Fe cabinetmaker and furniture builder who combs through heaps, boxes and bins at the flea market each Saturday and Sunday, looking for fine old tools that he can use at the huge maple-and-padauk workbench he made. Harper flatly refuses to lend his tools—on philosophical grounds. "If you want to do this kind of work," he says, "you should have the tools. When you do something like this for an occupation, it's important to understand a little of the history of what you do, and of the tools. Then, if you come across a job that requires a special tool, you'll know what to use, where to get it."

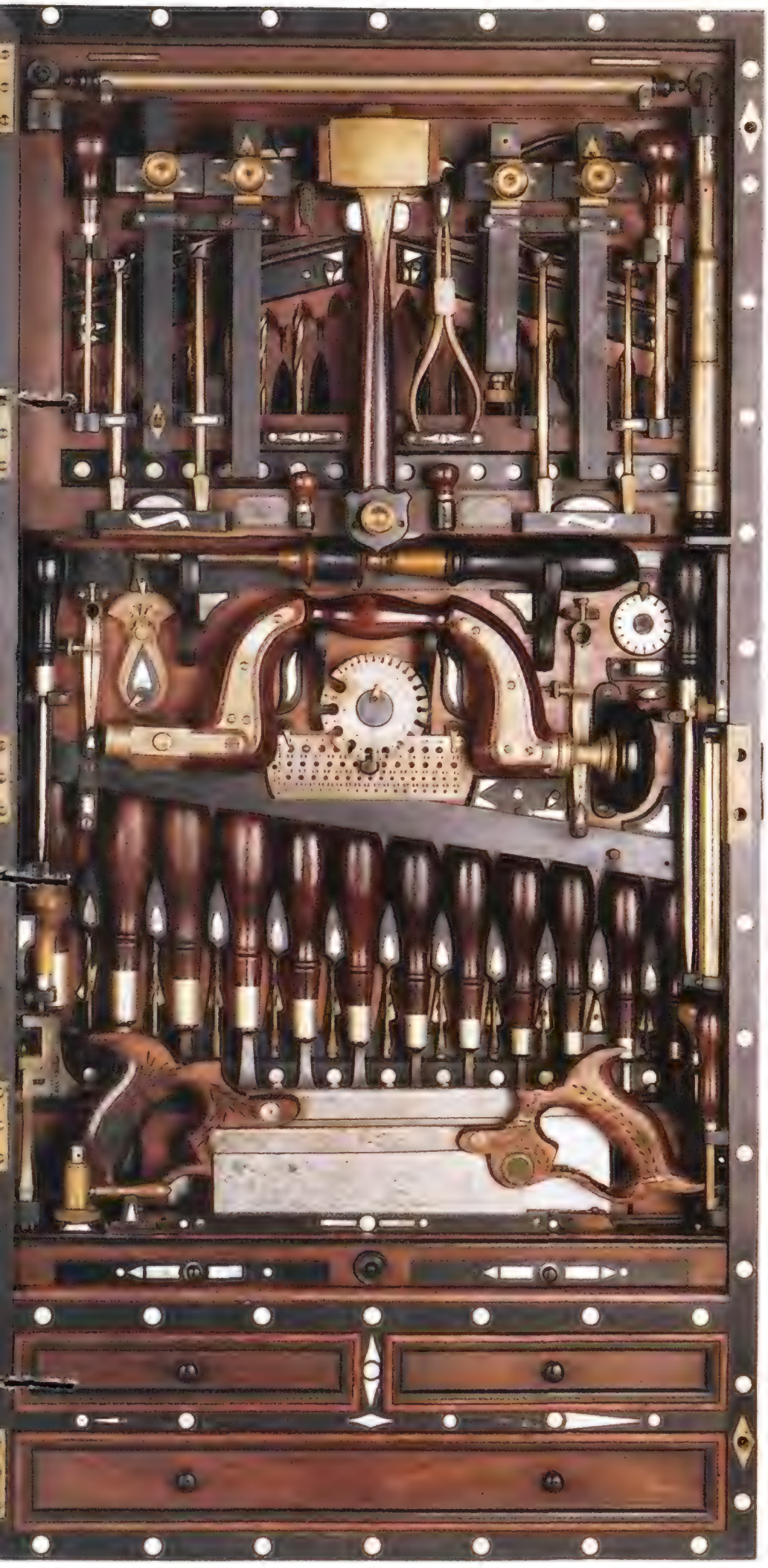
Harper has about $5,000 worth of old tools at the shop. At home, he keeps another couple of thousand dollars' worth of tools so specialized that he seldom uses them, but he loves them nonetheless. These include tiny instrument-maker's planes; a Stanley 55 plane like the one Scot Carlson inherited; what one expert calls a "portable wood mill"—a nickel-plated extravaganza that came with 55 blades and can produce, in the hands of a skilled woodworker, just about all the molding the fanciest mansion would require; and a slightly less complex Stanley 45, with a mere 23 blades.

"It does get a little bit crazy," Harper admits. "Besides the 55, I have two 45s. I've used a 45 *once*, to make a door. It's kind of playing around to see if you can figure out what to do with it. I have 20 or 30 hand planes, and realistically, you can get by with no more than 5, doing a job like I'm doing. But I see a tool like the 45—and it's just so beautiful, I can't resist it. You take one of these old Stanley tools, and it feels *just right*. They made the handle of rosewood and it fits

Robert Marsala



The envy of many collectors, this wall-mounted, 39-inch-square piano-maker's kit, owned by Peter Hardwick, is one of several tool chests to go on display next month at Smithsonian's Museum of American History. Built by Civil War veteran and Masonic brother Henry Studley of Quincy, Massachusetts, the intricately inlayed chest



is described in his 1925 obituary as "one of the most remarkable things of his creation...a most ingenious contrivance containing multitudinous number of tools of all sizes and kinds." Numerous Masonic symbols are incorporated into its decorative motif. Some 250 tools fit into layered compartments that flip up and fold out.

your hand just as if it was made for you specifically."

Harper picks up a Stanley 35 smoothing plane with a wooden body and says, "This I don't even use, because it's in such excellent condition. I don't want to ding up the bottom any more than it is. You can take a shaving of one sixty-fourth of an inch off with this. I keep it around because it's an example of a beautiful old tool you'll just never see again."

But there is another reason Harper keeps these old relics of the anachronistic vocation he has assumed. "I'm particular about the work that I put out," he says. "To me there's something about the quality of the tools I use. I feel an obligation to use a tool in the manner for which it was designed. You can picture in your mind the shop where they made these tools and the craftsmen who made them; and you can picture how they would want you to use it, keep it clean and sharp. Sometimes you feel as if you are working with the ghosts of your predecessors who worked before you."

"You buy it whether you need it or not"

Chad Palmer, a retired Marine Corps master sergeant, spent much of his youth at war in the Pacific and in Korea, and afterward tried operating pack trips in the Sierras but found that the mountains were becoming too civilized for him. Despite advice from a drill inspector at boot camp never to own anything that won't fit into a seabag, Palmer, now in his 60s, collects old tools; he specializes in hammers and sells them, too, at the Santa Fe flea market, where his stand is a weekend rendezvous for Harper and other area collectors and users. Palmer sells many of his tools for much less than modern counterparts are going for at the hardware store. This baffles and delights the occasional noncollecting, tool-hunting artisans who happen upon his stand, which glows like a museum showcase amid the flea market's usual run-of-the-mill castoffs. Palmer will sell them a drawknife for $10 or $12 that is vastly superior to the one going for $30 or more at the store; or he'll sell an ancient hammer for $5 or $6 that was smiting at the turn of this century and will still be going strong at the turn of the next. "You buy it whether you need it or not, and hope it's better than the one you have. If it isn't, trade it off," Palmer says of his own week-in, week-out quest for more tools. "I sell 'em so I can afford to get better ones."

Palmer asks his clients, as they keep coming back to his booth for more tools, "Are you a collector? Or are you an accumulator?" His own shop is a barracks-spare assemblage of beauties that began to form when Palmer decided to restore an antique ship carpenter's tool chest, thinking he would make it into a coffee table. Then when it was finished he said, "Hell, it looks so pretty, I'll just fill it!" A near kin now sits as the center-

piece of some 1,500 tools, including about 800 hammers.

"They're all different," Palmer says, pointing to a bill poster's long-handled hammer, some Maydoles, some shoemaker's hammers and farrier's hammers, and a Cheney nailer with an ingenious pair of spring-loaded balls built into the head to hold a nail, enabling a carpenter to slam it into a hard-to-reach plank one-handed. And there is an odd hammer with no face, just two opposing claws. "Only thing I can figure out," Palmer says, "is there were a bunch of drunks at the foundry one night."

Standing amid the collection of Dan Woodford, another ex-Marine, Palmer savors the fine Butcher chisels and nice old Buck Brothers chisels, the tray of gleaming dividers, the augers down in the bottom of one of the several magnificent job-site tool chests handcrafted of hardwoods. Palmer and Woodford at last arrive at the planes.

"I like planes," Woodford says, reviewing the ranks of glowing plow planes on the shelf before him and the molding planes arrayed on the bookcase. "They look good to me. I've always been interested in tools, always had them, always used them. The more I learn about them, the more I like them."

Then Woodford reaches for one of the molding planes. "I've got one I picked up that I'd kind of been looking for. It's a John Sleeper. Fought in the Revolutionary War. Went up to Quebec, came back and made planes. For a long time. Made a lot of them. Not very valuable." He shows the tool, a beech molding plane made around 1780, to Chad Palmer. "Damn it," Palmer says admiringly, "you're really holding a part of history!"

On another occasion, gleaning the wares at the flea before opening his booth for business, Palmer chanced upon a prize he now keeps wrapped up in an old, cut-down gun case. He presented it at a meeting of the Rocky Mountain Tool Collectors with the pride of a man who'd just discovered something exquisitely rare, which in fact it is. "This is my big find for the summer," he said, revealing a Woodrough & McParlin panther-head saw. An ordinary handsaw to the layman, but to Palmer's gimlet eye, and to his envious colleagues, it was immediately recognizable as one of just six such saws known to exist from W&P's 1866-81 production run. Like the others, this one has a snarling panther's head cut into the curling tail of the saw handle. It was a priceless and thrilling discovery. But best of all, it was his.

"In collecting," says George Mayhew, a retired Albuquerque subcontractor who was standing there when Palmer unveiled his panther-head saw, "sometimes it's more fun if you come across it yourself at a flea market than if you buy it from a dealer." Mayhew, who learned woodworking as a boy, *uses* his magnificent collection of old tools, which, ironically,

Using 19th-century device to slightly taper edge of playing card, cheaters could then pull card from deck.

Array of copper blowtorches, dating from 1880 to 1940, salutes generations of plumbers and glassblowers.

some collectors just can't bring themselves to do.

Mayhew sets himself devilish tasks, such as restoring a grand piano, an 18th-century London game table, an armchair and other pieces. Coming into possession of an old grindstone, he proceeded to craft a bench for it of apricot—with oak uprights, a cherry crank handle and an applewood thumbscrew to hold the handle onto the crank. To make the canted holes for the legs, Mayhew used his boring machine, and to make the legs, he used a froe that he drove with a mallet he'd carved of apple.

A huge threaded wooden shaft that Mayhew picked up in Hannibal, Missouri, lacked an application—until he spotted a picture of an 1896 Hammacher Schlemmer gent's woodworking set, "outfit No. 100." Such a set, a compact and sturdy four-drawer workbench for gentlemen cabinetmakers, would fetch thousands of dollars today. The original, however, had cost just $30 without tools and $75 fully outfitted. Duplicating it in quarter-sawn oak has cost Mayhew—so far—nearly $4,500. First he had Daniel Elisberg, one of his employees, build the cabinet, incorporating the shaft as part of the vise. Then he began to stock it with the tools shown in the Hammacher Schlemmer illustration, a task which is now in its sixth year.

One item, an appropriate oilcan, proved especially elusive. But then one day Mayhew spotted one in the collection of Elmo Rinehart. This was no small feat because Elmo's collection brings on an almost instant and giddy sensory overload in visitors, afflicting even the most focused connoisseurs with vertigo.

Just getting *to* Elmo's collection is an accomplishment. Wandering through his house-shop-museum compound, one first encounters Elmo's wife June's irresistible collection of carnival glass and Japanese teacups, including one set in which one can behold, pale as ivory, evanescent as smoke, the carved likenesses of tiny geishas. Then one must successfully navigate their son Richard's toy collection, which contains every cap gun, Captain Video lunch bucket, toy car and truck and motorcycle, water pistol, tin airliner, aluminum fighter plane and Erector Set one ever yearned for as a child.

Then one must pass the 1951 Hudson Hornet and the '62 Chevrolet Impala convertible, the '25 Chevy one-ton pickup and the '51 Studebaker pickup—only to confront the majestic Russell compound steam traction engine, numbered 8339 on the handsome brass plate that was boldly affixed to its locomotive-size nose in 1895 back at the factory in Massillon, Ohio. Elmo had a $3,000 trailer specially built just to haul old 8339 in from some farmyard up around Minnesota.

There are lots more projects to admire in Elmo's two workshops. Here are some ancient bar clamps Elmo just got for 74 cents at the Albuquerque flea; they need oiling. Then there are the 50 or 100 wrenches he just picked up, boosting his wrench collection to several

Antique cold and hot cutters, bending fork, hammers, small anvil, are still state-of-the-art blacksmith tools.

An adjustable-wrench collage, suitable for framing, shows vast number of ingenious pipe-gripping designs.

Varieties of tools displayed in this 40-foot-square room represent only a portion of the collector's assemblage.

Elmo Rinehart, owner of collection above, proudly shows off a gigantic wrench used on steam locomotives.

thousand, now. Elmo doesn't know exactly how many he has. He says, more than anybody else in the West. He bought $10,000 worth in 1985 alone, and he said back then, "You can't even tell."

That's because, once inside Elmo's 40-by-100-foot steel building, erected just to house his *main* tool collection, at a cost of some $200,000, there are so many other wrenches to notice. Here are the bicycle wrenches, the Pierce-Arrow and the Cadillac wrenches, the John Deeres, and over there are the International Harvesters, the Mack truck wrenches. There, the pipe wrenches, the old Trimos and the Ridgids. Then there are the Bonneys, the Fords and, of course, the Stillsons, those massively built, oak-handled lovelies whose name became synonymous with the word "wrench." And there are gorgeous oddities: a slip-gear Quick Set & Co. monkey wrench from Kokomo, Indiana, that adjusts with a snap of the thumb; a gun-blue Wizard, for taking the nuts off buggy axles; a Speedee-Ratchet (brainchild of some tool-making genius in East Alton, Illinois), on which you can turn the wrench jaw by simply pulling a chain. There is the contribution to wrench technology of the Powergrip Tool Co., of Mountainair, New Mexico—a sleekly polished beauty that works like a big cigar cutter, chomping down on a bolt head with serrated jaws. Elmo dreams about wrenches. "One night," he recalls, "I was dreaming about how to make this wrench. Then—I woke up. And I forgot about it. Then, I dreamt again! I got up and scribbled it down: 'Grind out the screw!' " Elmo never bothered to take out a patent on his dream wrench. "No use," he says, "take too long."

Of the philosophy, the esthetic, the technology of wrenches, Elmo says little. "I like 'em," he says, "because each one is different. It's a challenge to try to find something you don't have."

It's a challenge even to imagine something Elmo doesn't have. Beyond the wrenches there are his thousands and thousands of carpenter tools. Beautiful Keen Cutters and Winchesters and Stanleys galore, his late father's miter box, an odd clockwork door-hinge mortising machine, blowtorches, an Empire scroll saw that looks like the offspring of a bicycle mated with a sewing machine, a jeweler's lathe on loan from Chad Palmer, an old U.S. Army cobbler's kit, a drill press made out of Model T parts, a gigantic post drill (disabled with a seized shaft and awaiting repairs)—this from the King Ranch in Texas.

All of it neatly tagged, displayed on pegboard racks, all found on Rinehart family outings aboard their Ford-powered, air-conditioned 1947 Flxible (without the *e*) motor home, which itself is a sort of elegant tool, a magnificently accoutered vehicle for prowling backroad America on the endless quest. They don't stop at

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every flea market and secondhand shop, Elmo says. "Just the ones that are open."

Why? Why does Elmo want all these tools? That's something he doesn't bother to think about, any more than he ponders how come he likes wrenches, he explains as he hurries past a dusky, golden cluster of plumb bobs to show off a 17th-century goose-wing ax with two maker's marks and a tree-of-life emblem forged into its blade. He shows me the laid-on steel edge of this wickedly beautiful old tool, which is as ready to chop today as it was when it left some smith's forge four centuries ago. "Just crazy, I guess," Elmo says.

So it was here in this Bermuda triangle of collectordom—this black hole of hardware into which countless stunning implements are fetched by the irresistible pull of Elmo's unquenchable desire, but from which they seldom leave, presided over by this self-admitted nut case who is so in love with tools that he brings them in by the boxful, and usually has 40 or 50 boxes on hand that haven't even been sorted out yet—it was *here* of all places that George Mayhew found the oilcan.

Elmo had the "O.V.B." oilcan; George wanted it. After considerable dickering, George went home with it.

Elmo had it. The perfect oilcan to go into the replica Hammacher Schlemmer tool cabinet. An "O.V.B." (for "Our Very Best"—what else? They didn't mince words in those days) oilcan, made in Chicago around the very time the Hammacher Schlemmer craftsmen were assembling the original of the cabinet. Well, it took a while, some hard bargaining, some cat-and-mouse tactics and strategy. But finally, Elmo parted with the oilcan. In return, Mayhew had to fork over a fine old breast drill.

Now George Mayhew is waiting for his turn. He has this big old trailer-mounted portable sawmill in his warehouse, you see, with this engine that you start up with gasoline, but that can then be switched over to run on kerosene. And he knows that Elmo—who recently, in his spare time, rebuilt an ancient Briggs & Stratton five horsepower and painted it all up in green and bronze—has a sort of a weakness for engines. And he suspects that Elmo has his eye on this sawmill. "Elmo is a hard man," Mayhew says, with a gleam in his eye. "Elmo wants that saw. If he has something I want . . ."

If you happen to spot one, grab it for George

And, indeed, not that he knows that Elmo has one, mind you, but there is something that Mayhew wants, because, for a tool collector, there is *always* something. Mayhew is looking for a little block of wood that held sandpaper in the days of that cabinet. It was exactly 4½ inches by 2¾ inches by 1 inch, and it had wire clips to hold the paper. Reissmann's Perfection Sandpaper Holder, it was called. A dozen went for $2.40 in 1904. If you happen to spot one, grab it for George Mayhew, won't you? He has some, um, extra butt gauges, a box or two of them, lovely things made of rosewood and ebony and mahogany and brass. The one that was crafted of mahogany and whalebone by some ship's carpenter and looks as if it might be some fetish from Betelgeuse and belongs in the Museum of Modern Art, that's not available—nor is the Hammacher Schlemmer cabinet itself, of course, because that, Mayhew says, is "my ark, what I'd keep if I had to get rid of everything else."

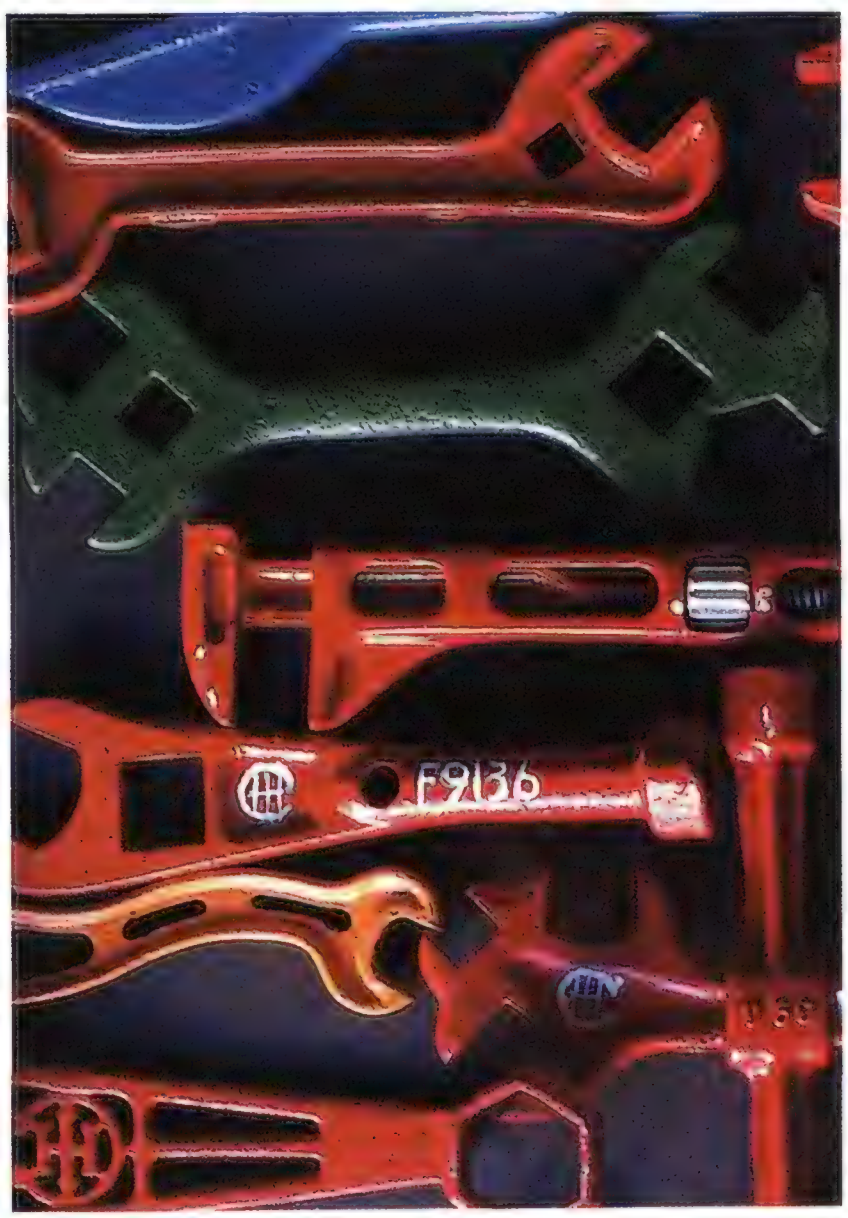
But those handsome marking gauges, and a few other jewels, he might part with, and maybe, just maybe, you can work something out. A little trade, perhaps. But for heaven's sake, watch it, because once you get started, once you decide there's no tool like an old tool, why there's just no telling where, or if, it will end.

There is always something out there that a tool collector wants, like . . .

. . . a Woodrough & McParlin panther-head saw

. . . or maybe a screw jack or a wagon jack

. . . or a Champion mortising machine



. . . and some repainted farm wrenches

. . . hammers of bakelite, wood, rawhide, brass or lead

. . . an ornate goat-head hammer

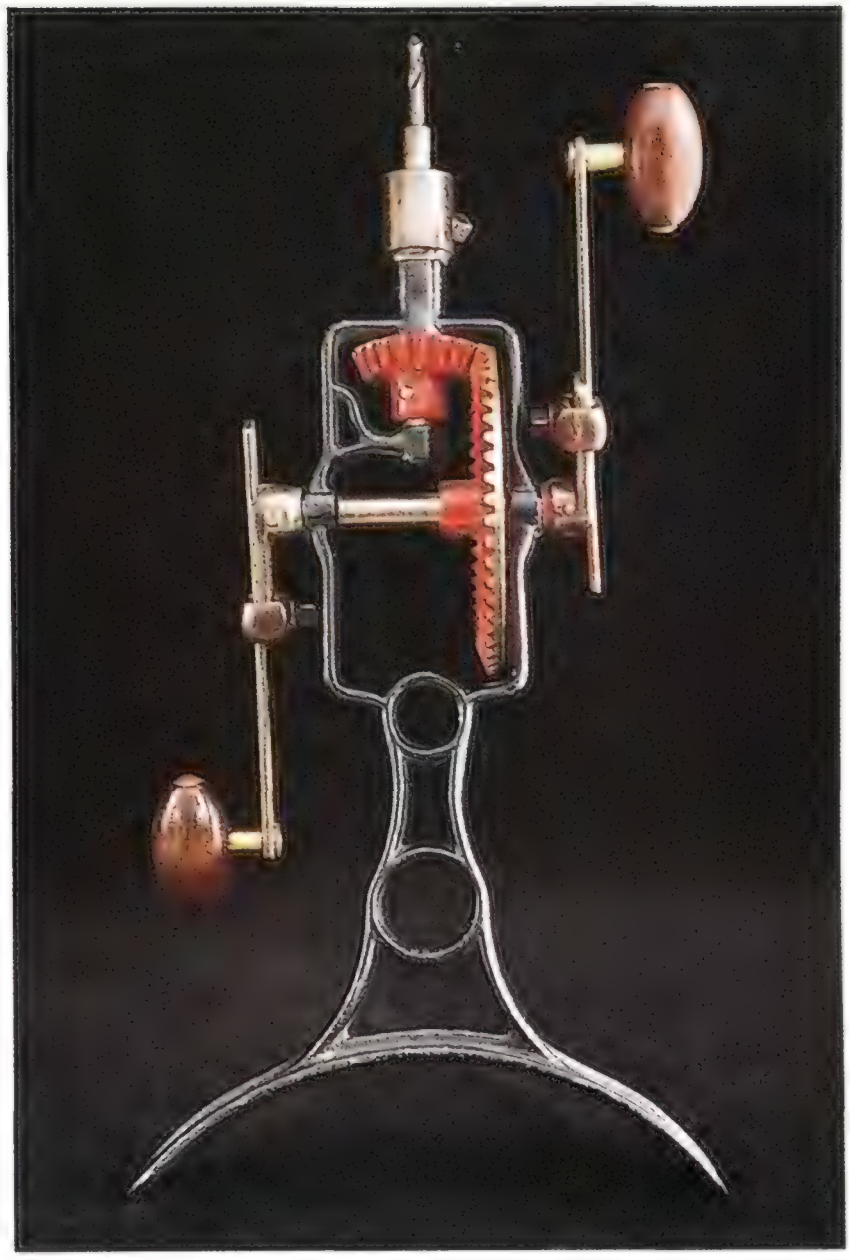
. . . possibly some embossed ax heads

. . . or conceivably dancing master calipers

. . . or an assortment of alligator wrenches

. . . and maybe a Connecticut-style hand adz

. . . and perhaps a Stanley eggbeater drill



. . . or a 19th-century breast drill

. . . and a diameter gage to measure rod or cable

. . . along with a few Pierce-Arrow wrenches

. . . and maybe even a double-claw, no-faced hammer. . .

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The view from onstage (here, before a Philadelphia Orchestra performance) inspired humorist Garrison Keillor to liken the space to a ship, with lamps ringing tiered balconies like a ship's running lights.

It is clear why performers are inspired: the acoustics and close proximity to the audience work like magic.

By Richard Covington

The house on Goat Hill is alive with the sound of music

For a hundred years Carnegie Hall has been center stage for musical firsts and virtuoso performances of everything from Bach to bop

Thirty years ago I tuned in our family's black-and-white console TV to watch an orchestra conductor nearly as hyperactive as I was perform the magic trick of conjuring images out of melody, of churning emotions out of dissonance. The man gestured grandly with his baton to the horn section, a wavy black forelock dropped over his forehead, and three horn players sounded out a theme. "What character is that?" he asked. "The wolf!" the audience of children responded noisily. Repeating the procedure, the man signaled the oboe, the flute, the clarinet and the drums, to which the kids answered instantly: "Duck! . . . Bird! . . . Cat! . . . Hunters!" "Wait, I left out the most important one," the conductor said, and with a momentary pause to tease the audience, lifted his baton once more. With the first note from the violin, the kids shrieked out "Peter!" and I chimed in with them. Rocking his arms jauntily as Peter's theme played on, Leonard Bernstein had won yet another convert. It was my first taste of symphonic music, nearly my first hint that there was a world larger, more sophisticated and splendid than my own. For me, and all the rest of the children from the hinterlands intently watching those Young People's Concerts, the air became slightly more rarefied with possibility. If I had had any idea at the time what an aura was, I would have recognized the one hovering around Carnegie Hall.

Basketball, the zipper and Carnegie Hall all made their debuts in 1891; the country would never be the same. I can easily imagine life without the zipper; no

Original Carnegie Hall (center) is dwarfed by new office tower that will bring needed money and space.

basketball gives me more pause; but music without Carnegie Hall is unthinkable. "The history of music in America was written on the stage of Carnegie Hall," declared Stewart Warkow, a former executive director of Carnegie. That statement was no exaggeration.

Tchaikovsky, the first major composer to make an appearance in the United States, came first to Carnegie Hall—for the opening festival in May of 1891—and ever since, Carnegie has retained its reputation for musical firsts. A virtually unknown Polish pianist, Ignace Jan Paderewski thundered onto the main stage; overnight, the cult of the virtuoso was born, and with it, the legend of Carnegie Hall as the Mount Olympus of musical performance. An unsmiling 16-year-old prodigy, Jascha Heifetz transformed the world of violin playing one night in 1917, and a 25-year-old Leonard Bernstein, in fabled big-break fashion, filled in for an ailing Bruno Walter and roused the audience to its feet at his conducting debut in 1943. The premiere of George Gershwin's Concerto in F met with rhapsodic reviews in 1925 and promised to dress jazz out in the formal respectability of the symphonic repertoire. Together Charlie Parker, Dizzy Gillespie and Ella Fitzgerald first brought bop to the concert stage at Carnegie. A fearsome Arturo Toscanini, given to admonishing latecomers from the podium, exploded at his orchestra during a rehearsal, "*Mi vergogno di loro!*" ("I am ashamed of you!") and stormed off the stage; that evening, he announced his retirement.

Vladimir Horowitz, who for years would play nowhere but Carnegie and then not at all in public, came out of retirement in 1965; his audience, some of whom had come from as far away as Australia and Japan, waited as long as two days in the rain for tickets. An unknown named Bob Dylan sang his off-key plaints to exactly 53 folk music buffs at a 1961 concert in Carnegie's chapter hall. A few years later, the Beatles and the Rolling Stones created such hysteria you could hardly hear the music for the screams.

A podium for political rhetoric

I was surprised to discover that earlier in the century, really up until the advent of television, the Hall had functioned as a town-hall forum—a glorified, elegant soapbox for statesmen and visionaries, suffragettes and occultists—for nearly all the significant historical movements of the past hundred years. Not merely in music, but in politics, religion, and all the bread and circuses of the American century, a seat at Carnegie Hall was as close to ringside as one could get.

It was here that Mark Twain addressed a benefit for Booker T. Washington's Tuskegee Institute and African-American access to higher education; here that an earnest firebrand named Winston Churchill de-

Violinist Isaac Stern, president of the Carnegie Hall Corporation, played a central role in rescuing the Hall from developers and raising the $60 million it took to completely restore the place to its original state.

fended British colonialism in the Boer War. Photographer Edward S. Curtis chastized his audience of European descent for the plight of the first Americans, the vanishing Indians of his romanticized portraits.

It was at Carnegie Hall that black and white musicians first performed together in concert, in Benny Goodman's 1938 tribute to swing. Dr. Martin Luther King jr. followed 26 years later, advocating nonviolence and racial harmony. Observing Carnegie Hall over these hundred years is to take the measure of the United States as it has matured from cultural bumpkin to moneyed connoisseur and musical arbiter.

For its 100th birthday, the Hall has arranged a discreet little celebration that is bringing the world's renowned orchestras, virtuosos and soloists to its stages in 150 events. This much we have come to expect. Of the unexpected offerings will be performances by cowboy poets, menhaden fishermen from the Outer Banks of North Carolina who sing sea chanteys, and a vocalist from the Louisiana bayous who is virtually the last to keep alive the Caribbean *décima* tradition transplanted from the Canary Islands. There will be a concert in tribute to Cole Porter, also born in 1891, and celebrations of jazz, organized by Wynton Marsalis, and folk music, rallied by Pete Seeger. An exhibit of photographs recounting the history of the Hall is traveling to Washington, D.C., Cleveland and Los Angeles.

Documentary filmmaker Peter Rosen, commissioned by the Public Broadcasting System to produce *Carnegie Hall at 100: A Place of Dreams*, has elicited touching and trenchant reminiscences by some of the performers whose careers were first launched at the Hall. The season's big bang has been saved for last: a ten-day marathon from April 26 to May 5. On May 1, Van Cliburn will perform Tchaikovsky's Piano Concerto No. 1—a few days shy of the 100th anniversary of its performance by the composer.

It was a balmy May evening in 1891 as the carriages made their way along 57th Street, past the rows of brownstone town houses, to Seventh Avenue. There, bathed in the flickering light of newfangled electric lamps, loomed an Italianate palazzo, a brick and terra-

Writer Richard Covington, an aspiring pianist who is not exactly a threat to Van Cliburn, is still waiting in vain for his Carnegie Hall debut.

cotta monument to a honeymoon friendship. Crossing to Scotland, Andrew Carnegie and his new wife, Louise, encountered conductor-music promoter Walter Damrosch, who had been scouting financial backing for a hall for his Oratorio Society and the New York Symphony. Carnegie invited Damrosch to his Scottish estate. A self-made steel magnate, Carnegie's tastes tended more toward Scottish folk tunes, which he whistled and sang about the house in a high, squeaky voice. Over long walks and fishing trips, Carnegie firmed his resolve to "better the world through liberal benefactions," as Damrosch later put it. As Carnegie had served on the Oratorio Society's board of directors, he was sympathetic to the conductor's goal. By the time the trio had returned to New York, Carnegie

Van Cliburn heads to stage for U.S. debut after Moscow competition win.

Ignace Jan Paderewski was one of the first musicians to set Hall standards.

Greek-American diva Maria Callas maintains her dignity at 1974 concert.

Seeger, Dylan, Collins, son Arlo, at Woody Guthrie memorial concert, '68.

Conductor Leopold Stokowski was familiar face at Carnegie for 60 years.

Booker T. Washington speaks at a 1906 tribute to Abraham Lincoln.

had pledged $2 million to build the new concert hall.

Not everyone shared Carnegie's optimism about the proposed location. Many predicted no one would travel so far uptown to attend highbrow concerts. It had not been so many years earlier that the only music in the neighborhood had been the sound of bells on the goats coming to drink at the Goat Hill spring, site of the future Carnegie Hall. But the farsighted Carnegie predicted a rapid development for 57th Street, one of the few thoroughfares that stretched clear across the island of Manhattan. Carnegie Hall therefore took its place alongside stables and blacksmith shops.

On that opening night in 1891, all of New York society turned out to witness what Carnegie had risked and wrought. The carriages were lined up for a quarter of a mile, and inside the hall, Schermerhorns and Schieffelins, Otises and Posts mingled with one another. "There was no coming and going of dandies and mouthpieces," the *New York Herald* noted approvingly. "All was quiet, dignified, soft, slow, and noiseless as became the dedication of a great temple."

Arriving unceremoniously by trolley, the melancholy Russian composer Pyotr Ilich Tchaikovsky, who had vacillated between exhilaration and tears over the course of his first visit to New York, was gripped by stage fright at the prospect of conducting his "Marche Solennelle." By contrast, Carnegie, a bantam figure with his bearded terrier's face and forthright manner, was rarely given to doubts, particularly as he surveyed the packed house—all 2,247 seats and 63 boxes were

Her fans rush toward stage after this farewell American performance.

On February 12, 1964, the Beatles hit Carnegie and 2,900 Beatlemaniacs.

Premier violinist Itzhak Perlman will perform three times during centennial.

He shares the stage with other notables like Mark Twain (seated at his right).

Leonard Bernstein conducts rehearsal a few years after smash debut, 1943.

In the '40s, Satchmo (Louis Armstrong) and band saturated Hall with jazz.

For 42 years, Editta Sherman has taken portraits of the greats in her studio—here, actor Van Johnson.

taken, at ticket prices ranging from $1 to a dizzying $15 for the five-night series.

After a windy introduction by Bishop Henry Codman Potter, Damrosch led a chorus of 400 voices that thundered out "Old Hundred." Carnegie Hall was born. "IT STOOD THE TEST WELL," proclaimed the *New York Times* in its review. Even Tchaikovsky shook off his doubts long enough to admit that the "Marche" went splendidly and later wrote in his diary that he had "slept like a dead man" that night.

From the outside, the Hall does not particularly announce itself as one of the world's grand performance spaces. Against the backdrop of the black slab of Metropolitan Tower, the Darth Vader high rise that dwarfs the Russian Tea Room next door, Carnegie Hall looks like the old-fashioned Victorian matron that it is. Beside the original six-story edifice there now rises another monument bearing the Carnegie name. Cesar Pelli's Carnegie Hall Tower is an intelligently executed complement to the other buildings, which it does not overpower, despite its 60 stories. The office and residential skyscraper should prove a lucrative arrangement for the music hall; it is expected to generate $75 million in lease revenues over the next 25 years. And the Hall also gains much-needed space.

Carnegie Hall is a place for the egalitarian, rather than the grand, entrance; two steps up from the street and you're inside, squeezed into the smallish foyer, on a level with everyone else. The aura does not really engulf you until you set foot inside the main-stage auditorium. As you stand in the back of the parquet, the Hall's designation for the orchestra section, your eyes take in the tiers that levitate above in four glittering horseshoes, all converging toward the stage, which is framed by its own upright, horseshoe-shaped proscenium arch. In the center of the ceiling, 80 feet overhead, is a double halo of lights, and as your eyes become accustomed to the melted-butter deliquescence that suffuses the place, you begin to pick out intricately wreathed and scrolled designs in the ivory-and-beige plasterwork and cornices. When I stood onstage, I peered out into the empty seats and got the impression that I could draw someone in the farthest reaches of the upper balcony into a conversation, just as if I were sitting across from them in a large, but not enormous, living room.

Robards and Brando polished their Method

The main hall is the largest and best known of the four auditoriums, 136 studios and offices that make up the Carnegie Hall complex. The basement, originally a recital hall, became the Carnegie Playhouse, an Off-Broadway proving ground where students at the resident American Academy of Dramatic Arts polished their Method acting. From 1896 to 1951 the Academy was scattered from the top-floor offices to the basement theater. Jason Robards jr. recalls yelling out from the 13th floor onto 57th Street to practice "projecting." Marlon Brando lived in one of the studios until the winning of his first Oscar, for *On The Waterfront*, made him too famous to stay.

At the time of the opening of Carnegie Hall, there were 2.5 million inhabitants and fewer than 13,000 telephones in all of New York City. If Isaac Stern had been around then, it's a safe bet that he would have had more than his share of phones. The renowned violinist and president of Carnegie Hall likes to keep in touch; his duplex apartment overlooking Central Park had at least a dozen telephones at last count. When you sit down to talk with Isaac Stern, you don't amble through a conversation so much as enter a verbal horse race. He loves to divagate, to schmooze, to rhapsodize, and few subjects inspire him so much or are as close to his heart as Carnegie Hall. For without Isaac Stern, there would very likely be no Carnegie Hall today. In 1960, just about the time I was watching those Young People's Concerts, the demolition of the Hall was very nearly an accomplished fact. At the eleventh hour and a half—with tenants already moved out, windows painted over and bulldozers almost at the door—Stern and an influential band of supporters, which included the mayor of the city, Robert Wagner, and philanthropist Jacob Kaplan, managed to stave off the inevitable. In the five months between January and May, Stern

and company performed the miracle that other committees had failed to achieve in five years.

Interrupted only a few times by phone calls, I interviewed Stern in his home and asked how he had become involved in saving Carnegie. "I heard about it and simply refused to accept it," he said. "It was a very personal thing and I just went hell-for-leather. Instead of going public and screaming about it, we worked 'inside' with the City Council and the State Legislature. Actually, Mayor Wagner was a great friend of mine. When I told him about my hopes to save Carnegie he said, 'You don't have to convince me, I was taken to Carnegie to hear Walter Damrosch's children's concerts.' He became my first important political ally."

Specifically to save Carnegie Hall, the New York State Legislature passed the Bard Act, enabling the city to buy the building for $5 million, designate it a landmark and lease it back to the Carnegie Hall Corporation.

Isaac Stern first attended a Carnegie performance when he was 15, two years after his concert debut in San Francisco. "There was no thought of 'When will *I* step on that stage?', never," he reflected. "It was too far, it was awesome." In 1943, a few weeks before his 23d birthday, he was indeed mounting the awesome stage to make his Carnegie debut and has returned hundreds of times since. "What Carnegie does, because of its uniquely projecting and warm sound, it makes your sound larger than life," he said. "When the surrounding area starts to give you back a little more than what you originally put in, you begin to answer. It's a little mystical, you feel the spirit of people before you. Carnegie launches the soul, it really does."

Experiments and innovations that worked

Starting with its unlikely location, much about Carnegie Hall was experimental. Its electrical generators were prototypes, and the Hall produced enough power to be able to sell the excess to the city. The uninterrupted sightlines of the interior were made possible by the use of cast-iron posts and steel beams, relatively recent innovations at the time. Decades later, the Hall would be one of the first structures in the city to have "air-conditioning": a primitive arrangement of enormous fans that blew air over blocks of ice.

Andrew Carnegie's choice of architect, William Burnet Tuthill, was inspired. Acoustical engineering as such did not exist, so Tuthill invented his own as he went along; his unreplicable success with the acoustics of the Hall was a product of years spent studying European concert halls and of a considerable amount of calculated intuition. He was such a perfectionist that on opening night, the jam-packed balconies suddenly panicked him, and he rushed home to recalculate the amount of weight they could support, working long into the night until he was absolutely satisfied with their soundness.

Much of Tuthill's life and work remains a mystery, and no one is quite so familiar with how much a mystery as Gino Francesconi, Carnegie Hall's obsessive archivist. After spending three years looking up wills in New York, placing a newspaper ad in Connecticut and pursuing leads in Florida, Francesconi finally stepped into an apartment in Cologne, Germany, and spied what he had been searching for. He grabbed one of Tuthill's original drawings of Carnegie Hall off the wall, then asked to borrow it for one of the centennial exhibitions. The answer was yes.

Trailing after Francesconi on an expedition down into the Hall's lower depths and up into its heavens, I began to understand how perfectly suited he was to his task as archivist, and how the job drew on his talents as archaeologist, detective, patient monk and accomplished forger. His handiwork is on display on the various levels of the Hall, where every single one of the letters, manuscripts and compositions are artful fakes. The originals had been in place until the 1986 renovation, when a horrified conservator from the Morgan Library pointed out how much damage the dust, cigarette smoke and acid burns had inflicted on them. It was nothing short of remarkable that only two letters—one from Bach and another from Mozart—had

Carnegie Hall's doyenne of piano teachers, Emilia Del Terzo moved into the complex when she was 16.

Archivist Gino Francesconi has collected remarkable memorabilia, but his heart's desire is to locate an original opening-night ticket.

Founder Andrew Carnegie promoted New York City culture.

been stolen in the 40 years they had been on display.

Francesconi has been prospecting the Hall since he started as an usher in 1974, and it was his personal collection of old posters that formed the nucleus of the archive when it was belatedly created during the 1986 restoration. As we passed along the corridor of the dress circle, one of the closed doors called to his mind an early hunting expedition. A patron had dropped a borrowed library score, which fell into the crawl space between the balcony and dress circle. "The next day I went through this trapdoor looking for it, and it was amazing," Francesconi said, relishing the memory. "I found programs that went all the way back to the 1890s, ticket stubs from the 1940s."

Upstairs are all the studios and offices, squirreled away in two towers—one with 12 stories, built in 1894, the other erected two years later, with 8 stories added to the existing 6. Where the Friends of Carnegie Hall now make their offices had been Studio 61, the home of Ballet Arts. Jerome Robbins learned choreography in Studio 61, and Agnes de Mille perfected *Oklahoma!* and *Rodeo*, her balletic tributes to Americana. Isadora Duncan and her barefoot Isadorables rehearsed for an unfettered exhibition of interpretative dance on the main stage. Leonard Bernstein worked as a rehearsal pianist (not for Duncan), earning a dollar an hour until he was fired for not keeping strict time.

As we continued through the jumbled warren, the halls twisted and turned like a maze. Seated in chairs along the walls as Francesconi and I passed by were clusters of students—some not more than 10 years old—accompanied by their parents and teachers. Others nervously stalked the corridors with sheet music in their hands, humming and singing softly to themselves. This, I learned, was the preliminary round of auditions for the National Piano Teachers Competition. In the center of the hubbub, a tiny, flame-haired character boiled by like the Mad Hatter in *Alice in Wonderland*. Francesconi and I made way. In her wake, he identified her as Emilia Del Terzo, Carnegie Hall's doyenne of piano teachers—she has lived some 60 of her nearly 80 years in the studios. "She used to make ravioli for Toscanini," Francesconi informed me.

"It's one of the last artist's garrets," mused Andrew Bergman. "You feel like a figure out of *La Bohème*." Bergman, the scriptwriter and director of the recent film *The Freshman*, occupies a studio office down the hall from old Studio 61, and was describing the atmosphere during filming of the PBS special *Carnegie Hall at 100*. "It's hearing tenors warming up and seeing all the little girls in their tutus, like little Degas figures scampering around. It's sort of this ocean liner with something going on at first, second, third and steerage."

On the same program, Agnes de Mille gives her own reminiscence of working in the studios: "To know that there was a standard, to know that there was a recognition, to know that there was a preservation of what was beautiful, it was like a steady hand at the back."

Carnegie's "steady hand," its imprimatur, can make the difference between obscurity and renown. Ask Bill Sharp. Until a few years ago, his career as a lyric baritone was in the doldrums. Winning the 1987 Carnegie Hall International American Music Competition for Vocalists changed all that. Not that anyone recognized him in the coffeeshop where I spoke with him, but he is rapidly establishing his reputation as one

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After years of dependency on drugs (and other problems), Judy Garland gave a comeback performance on May 21, 1961, in arguably one of the most emotionally charged events in the history of Carnegie Hall. At the end of the show, fans rushed the stage, and Garland, leaning out over the apron, touched and talked to as many of her admirers as she could.

of the foremost interpreters of modern art song in the country. "I knew I wasn't any better than I had been before I won," Sharp reflected. "What that means is that there are tons and tons of performing artists out there who are very good, but people aren't interested because they don't have the stamp of approval, USDA Prime." Winning the award earned Sharp a recording contract (his record was nominated for a Grammy), a $20,000 promotion fund, a $10,000 cash prize, and most significantly, a debut recital at the Hall.

From very nearly the beginning of its history, Carnegie Hall has possessed this aura as the jewel in every performing artist's crown. On November 17, 1891, a dashing Polish pianist landed at Carnegie. He did not exactly take it by storm; his promoter, in fact, had such humdrum box-office expectations that he papered the Hall, offering free tickets. Undeterred by the lukewarm reception to his debut, Ignace Jan Paderewski transformed his second concert into such a riotous success that the audience stormed the stage. Paderewski had arrived, and with him, Carnegie Hall. Soon afterward, no doubt, the gag line "How do you get to Carnegie Hall?" was first heard, along with the corny response: "Practice, practice, practice."

Carnegie Hall was the first American space designed specifically for orchestral music. It was Carnegie's acoustics that set it apart, that attracted the world's virtuosos; its cachet and its sound were inextricably linked. With the Hall's massive $60 million restoration in 1986, the delicate balance of the acoustics was altered, despite the gargantuan efforts to return the Hall to its original state. After much expensive and protracted tinkering was done, the consensus is that the acoustics are moving closer to what they had been before the restoration. "As far as I'm concerned, come and enjoy," recommends Isaac Stern. "It's not a subject for public discussion any longer. The curious thing is that now that we have done it so hugely successfully, nobody says how good it is."

The acoustics might be perfect, but that would matter little if the seats were unfilled. As Judith Arron, the Hall's executive director, explained: "There is no point in putting great artists onstage if you don't have an audience. One of our greatest missions is to develop that audience for the future." Walter Damrosch conducted youth concerts in the first year of the Hall's existence, and they have continued, in one form or another, ever since. This season, some 21,000 kids will descend on Carnegie; more accessible are the workshops by which Carnegie goes to the kids. In one series, students in grades four through six choose emotionally charged words that an improvisational theater group helps them develop into a story. The Puerto Rican folk group Los Pleneros follows up with a demonstration of *bomba* and *plena* songs that sustain musical narratives. In subsequent sessions a poet and a jazz composer

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teach the students how to set the lyrics from their own word banks to melodies.

No one could accuse Carnegie of parochialism; if anything, the Hall has been a champion of eclectic programming from the beginning. Now, Carnegie's "steady hand" encourages young people to believe that their culture, whether it means Dominican *merengue* or Mohawk myth recitative, is being taken seriously.

Jazz and classical trumpeter Wynton Marsalis modestly admits he never sounded that good at Carnegie. He could be wrong. Like others, Marsalis speaks of the mythic importance the Hall commands, its capacity for fostering what he calls "generational clarity." "When you stand on the stage, you recognize that you're in the same position that many other serious musicians have been in, and that one portion of what it takes for you to accurately represent them has been taken. You need these time-honored traditions to be able to pass down fundamental information."

Carnegie inspires people. Why else would a musician of the stature of Isaac Stern devote so much of his energies to it? Or violinist Itzhak Perlman drop everything on a moment's notice to substitute for an ailing performer? Or what would prompt financier Sanford Weill and banker and amateur cellist James Wolfensohn to donate millions to the Hall's restoration? Surely not, as in the case of Wolfensohn, for the chance to play cello onstage at the reopening gala. Prestige is part of the magnetic appeal, sonic splendor another.

Ultimately, it is the grandeur of the place populated by all its illustrious ghosts: it is hallowed ground, a reminder of the highest musical achievements to which we have aspired. To intimidate and to prod, to stumble and then to take off—in a world of music too often ruled by commerce—there needs to be a standard, a temple for the "generational clarity" sought by Marsalis; there needs to be an opportunity for what Agnes de Mille memorably characterized as "the absolutely unbeatable vegetable strength of the art impulse." Nothing less than Carnegie Hall will do.

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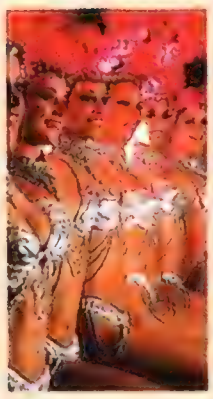

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By Michael Kernan

Showing the West in paintings as big as all outdoors

With his gigantic and romantic landscapes, Albert Bierstadt introduced Americans to the awesome beauty of their own frontier

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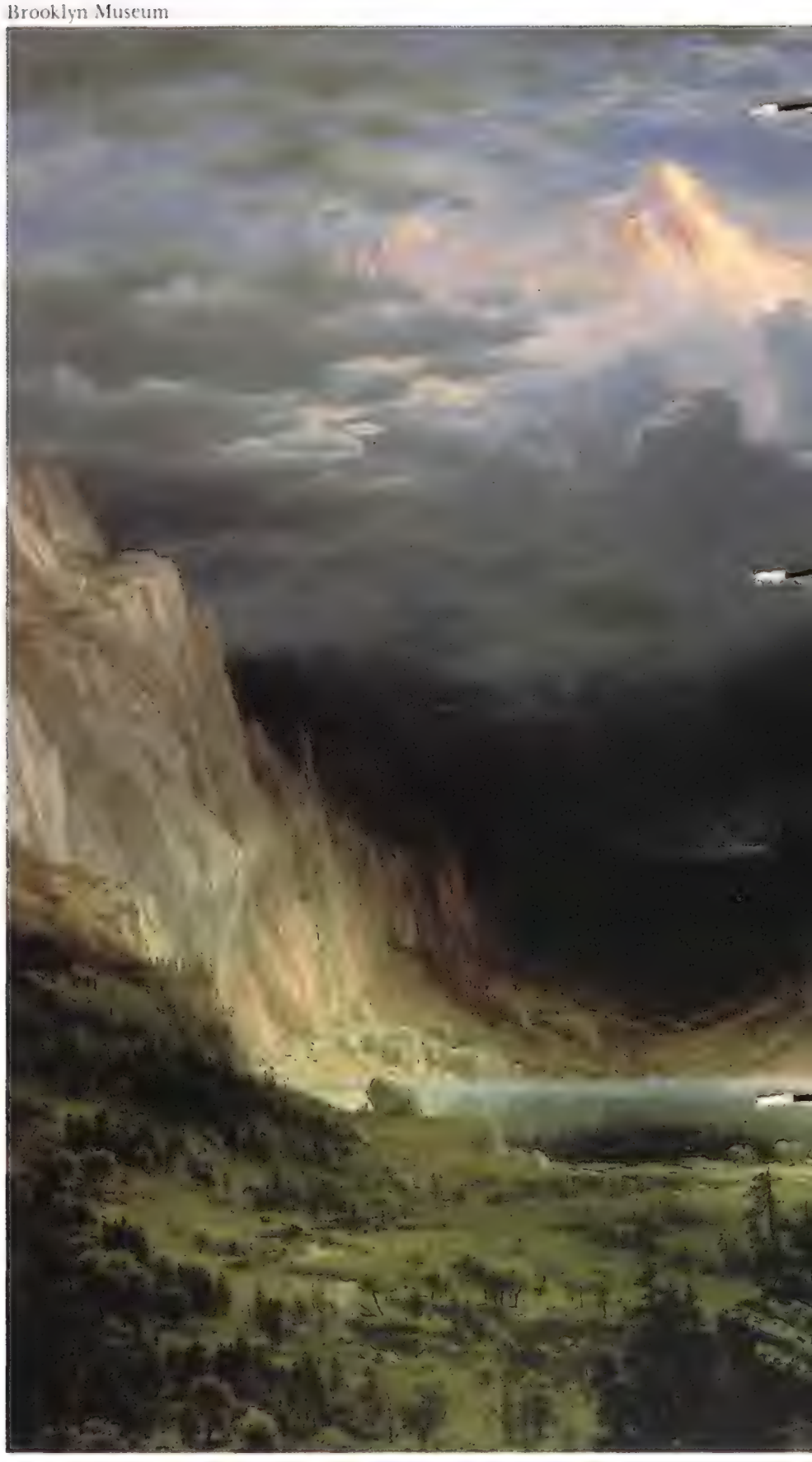

Storm in the Rocky Mountains, Mount Rosalie, one of the artist's great landscapes, combined fact, fancy.

Tastes change.

In the roaring middle years of the past century, Albert Bierstadt was big. Everything about him was big: his landscapes covered whole walls and so commanded the popular imagination that there was a joke—his next work would depict "all outdoors." He sold paintings for as much as $25,000, a tremendous sum in the Civil War era, and was reported to have earned $120,000 in three peak years. Even Malkasten, the towered stone chateau he built on the Hudson, was sited at the widest part of the river so that, one wag claimed, he would have room to turn his canvases.

A master showman, one of the first to reveal the wonders of the American West to Easterners, Bierstadt was at home in Yosemite and Paris, in Indian villages and at the Court of St. James's. He became something of a celebrity.

But even in his peak years, his work attracted strong differences of opinion. One important critic found it "immature and on too pretentious a scale." His paintings were called "claptrap," indulging in "mere grandeur of landscape," and "vulgar, scenic art." Over the years the prices his paintings commanded were subject to wide variations too. The landscape *Domes of the Yosemite*, once valued at $25,000, was auctioned in 1872 for $5,100. Another decade down the road, *Among the Sierra Nevada Mountains*, a great painting of the 1870s, brought $1,400; it had first sold for $15,000.

The geologist and author Clarence King, who had traveled the Sierras with Bierstadt, thought that his paintings "twist and skew and distort and discolor and belittle and bepretty" the mountains the two men had tramped across together. "His mountains are too high and too slim, they'd blow over in one of our fall winds." And Clarence King was a friend.

When Bierstadt died in 1902 he was so thoroughly forgotten that a contemporary painter said, "I did not know he was alive until I saw that he had died."

About 20 years ago, after generations of obscurity, Bierstadt began a comeback. A large exhibition of his work in 1972 was followed by a full-length biography of the artist. And since then renewed interest in the

Mount Rosalie was a fictitious mountain (in center) and named after a woman whom Bierstadt later married.

An enormous painting, 7 by 12 feet, it was sold for $20,000 in 1866, when Bierstadt's fame was at height.

Hudson River School (he was of the second generation) has sent many a scholar back to study some of those vast canvases.

A major retrospective on Albert Bierstadt is about to be launched at the Brooklyn Museum, opening February 8 and closing May 6. It will travel to the Fine Arts Museums of San Francisco June 8-September 1 and will wind up at the National Gallery of Art in Washington November 3 to February 18, 1992.

The show will include 75 of his most-representative and best-preserved works. There will be some of the oil sketches from which he created his immense confections. He rarely showed these quick little studies but kept them for his private use. He tells of dashing off 60 in five days. Yet to the modern eye it is these small sketches that may prove the most intriguing part of the show. For they have a laconic simplicity that at least one observer has found "startlingly modern."

We have come full circle.

Though Bierstadt was born in Prussia (January 7, 1830), his family moved to New Bedford, Massachusetts, when he was 2, the sixth child of a hardworking cooper who apparently worried that his son would not be able to support himself as an artist. It wasn't easy:

The artist at 43: very much the man of distinction, but tastes were changing; many thought him passé.

Fine Arts Museums of San Francisco

Albert taught himself drawing and almost immediately started giving lessons, advertising—"$3 for 24 hours"—as far away as Boston.

Remember that advertising. It is a key to one side of Bierstadt's personality. Because he was a skilled promoter as well as artist. One summer as a young man he traveled with a magic-lantern show around New England, displaying pictures vastly enlarged on screens. These dramatic illustrations with their special light effects, shown in a darkened room like the enormous panorama paintings and dioramas then popular, perhaps were precursors to the movies. Certainly they were harbingers of the gigantic paintings favored by Bierstadt, Frederic Church (SMITHSONIAN, October 1989) and others—which also tended to be shown in dramatic settings, with elaborate lighting, curtains and a hushed atmosphere.

With his savings, the youthful artist went to Düsseldorf, then a major international art center. His drawings were said to be so bad that the Düsseldorf Academy rejected him. But he was a fast learner, and apparently by sheer observation and hard work, he made himself an accomplished painter.

On a trip to Switzerland in 1856 he began to paint the Alps, his imagination catching fire at the awesome heights and chasms. This sensation upon experiencing "the Sublime"—that is, any scene in nature that commanded awe and a frisson of fear—was much prized at the time. European romantics raved so about it that Americans wanted some of it too.

Returning to New Bedford the next year, Bierstadt set about promoting himself in earnest. A big art show he put on in his hometown (charging 25 cents admission) attracted some attention, and soon he was selling his work for real money, notably $925 for a large painting of Lake Lucerne and $400 for *The Arch of Octavius*, then called *The Roman Fish Market*, possibly his most appealing genre painting (above).

Bierstadt built Malkasten, at Irvington-on-Hudson, after his marriage in 1866; it later burned down.

The Arch of Octavius (aka *The Roman Fish Market*) was an early success. The artist sold it for $400.

He told a friend that in the year since his return from Europe he'd sold nearly $4,000 worth of pictures. His career had taken off.

It was the summer of 1859 when Bierstadt finally came face-to-face with the Rockies, as a member of Frederick Lander's survey party. He and an artist friend roamed the Continental Divide, the Black Hills and the Wasatch Range for several weeks, writing home excited tales of their travels. All his life, Bierstadt found ways to publicize his trips, turning them into romantic adventures and setting the stage for big money later on. He became known as "the artist-explorer."

As Linda Ferber, chief curator of American painting and sculpture at the Brooklyn Museum and cocurator of the exhibition, along with Nancy Anderson of the National Gallery of Art, writes, "Bierstadt's career is an example of the American success story, chronicling the rise of an ambitious and indefatigable self-made man. . . . His personal qualities were those more commonly ascribed to a Jay Gould, an A. T. Stewart or a Cornelius Vanderbilt than to a painter of landscapes."

When he arrived in Düsseldorf as a young man, a fellow student wrote, Bierstadt was "the most timid, awkward, unpolished specimen of a Yankee you can imagine." Four years later he was seen to have "the manners and bearing of a well-bred gentleman."

Handsome, with courtly ways and commanding presence, he moved easily in the highest circles in Europe and later in his own country. Writes Ferber: "He conducted his career on the grand scale." For those who saw art as a priestly vocation, as people did in that age, his business acumen and aptitude for self-promotion were anathema.

There are few clues about the private man. Scholars

Freelance writer Michael Kernan wrote about today's landscape painters, who are heirs to the tradition of Bierstadt and Church, in SMITHSONIAN, *April 1990.*

The Rocky Mountains, Lander's Peak was Bierstadt's first great landscape, and it turned him into a celebrity.

While mainly an imaginative rendering of the scene, its powerful images convey a sense of authenticity.

and art historians have been stymied in their search, as most personal records and letters were either lost when Malkasten burned down or later destroyed by relatives. What the evidence does show is a disciplined man who knew early on what he wanted to do.

At the core was the artist, consumed in his work. Guides and companions have attested to the deep intensity with which he worked on his en plein oil studies; in these we see the full measure of the man. When fortune went against him and much of his painting was only a tired repetition of his early works, he kept on making those oil sketches. They maintained a veracity and brilliance until the end of his life.

But in 1859 all this lay ahead of him.

When he returned East that fall he took a studio in the famous Tenth Street Studio Building in New York, where Emanuel Leutze, painter of "Washington Crossing the Delaware," and other artists from the Düsseldorf days were already ensconced. The Bierstadt studio became a showplace, full of Indian artifacts and animal trophies, as well as photographs and his many oil sketches. Surrounded by all this information, he started to paint the Rockies.

At that time, Americans had heard a lot about the West. A generation of chroniclers, Irving, Dana, Parkman, Frémont and others, and artists the likes of George Catlin, Karl Bodmer and, as far back as 1820, one Samuel Seymour, had only whetted the national appetite. The forty-niners, especially those who had returned from the goldfields, had been publishing reports and letters in their local newspapers for years. Surveyor-pioneers plotting a transcontinental railroad wrote down their observations too.

And for anyone who read them carefully, they told of hardships and of unforgiving landscape. The diary and crude sketches of forty-niner J. Goldsborough Bruff, for one, should have given pause to the most sanguine armchair explorer, with their accounts of unrelenting deserts, salt sinks, poisoned streams, locoweed that killed the cattle, mountains of rubble that broke the Conestogas' axles, and cliffs that meant days and weeks of hauling wagons up and down by pulley. It was country that could take the heart out of a man.

But for most, the imagined West was at least as great as the Alps, the American version of Europe's Alpine Sublime, the very embodiment of our Manifest Destiny. Bierstadt was part of the reason why.

One important early Western landscape, *The Rocky Mountains, Lander's Peak* (pp. 90-91), was painted in 1863 after Lander's death as an officer in the Union Army. A broadside about the painting spoke of the artist's vision—a city of "our descendants" in these wilds. A press account describes, in the somewhat unbuttoned style of 1860s journalism, "the distant tramp, not of the buffaloes, but of civilization, coming like an army with banners." Bierstadt refused $10,000 for the work, instead exhibiting it in Boston and later New York, where it drew crowds of people willing to spend 25 cents for admission.

It was the start of great audiences to come. In 1863, while the Civil War raged, Bierstadt returned to the gold mines of the West with his friend Fitz Hugh Ludlow, who wrote newspaper articles about the journey. They spent seven weeks sketching in Yosemite, swung north into Oregon Territory and returned via the Panama Route. The giant works that came out of this trip brought Bierstadt's career to new heights. *The Rocky Mountains, Lander's Peak* and *Domes of the Yosemite* had bids for $25,000; *Storm in the Rocky Mountains, Mount Rosalie* (pp. 86-87) sold for $20,000. Rich English and American buyers were eager to order oversize paintings from the now internationally fashionable Bierstadt. His prices themselves became famous.

Generic mountains, cobbled together

He also refined his marketing techniques. At New York's Sanitary Fair for Civil War wounded, he set up an "Indian Department," offering not only American Indian artifacts but also live performances by Indians, foreshadowing Buffalo Bill's Wild West shows.

But there was a problem, which came increasingly to the attention of the critics and, later, the public. It was about what the pictures actually showed. It seems the details were accurate. Geologists and botanists could inspect the canvases and approve of them. But the mountains themselves frequently were generic, cobbled together—with consummate skill and artistic sophistication—from the sketches, from photographs and from Bierstadt's memory.

Just look at them in their clarity and majesty, their

Corcoran Gallery of Art

When *The Last of the Buffalo* was submitted for the Paris Exposition of 1889, it was rejected as too big. Many found its subject out-of-date, but artist had meant it as a farewell to the romantic, bygone West.

Manoogian Collection

The Shore of the Turquoise Sea shows the artist in a different venue. Depicted are Caribbean shore and a moment of translucent beauty. Bierstadt visited area when his ailing wife, Rosalie, had to be confined there.

Museum of Fine Arts, Boston

When steamer ran aground Bierstadt was stranded in a fishing village. Color study *Wreck of the "Ancon" in Loring Bay, Alaska* resulted.

sunlit ridges and fantastic crags gleaming with ice, their glorious, heroic, impossible heights raking the sky. One skeptic with a surveyor's eye said that Mount Rosalie would have to be five miles high if you believed the skewed perspective of Bierstadt's canvas.

There was no "Lander's Peak." It was an imaginative composition. There was no "Mount Rosalie" as such, either. It was named by the artist in honor of Ludlow's wife, who was to marry Bierstadt after her divorce from Ludlow. And then consider "Mount Corcoran."

It appears that when banker William Wilson Corcoran opened his Washington art gallery in 1874, Bierstadt wanted very much to be represented in it. Church, Leutze, Kensett and Cropsey, his colleagues, were already there; the prestige was important. Bierstadt offered the gallery his painting of Mount Adams, worth $15,000, for one-third the value. It was turned down. So in 1877 the artist sent along his spectacular generic picture *Mountain Lake*, which he now renamed *Mount Corcoran*. "I think I have done well by him by naming one of our finest mountains after him," Bierstadt announced serenely.

The Corcoran Gallery board balked, but then Bierstadt simply appealed to Corcoran himself, and the banker bought the work for $7,000. By then, it had already been hung in the gallery, so it stayed.

This sort of maneuvering did not sit well with other artists or with the critics. In 1866 Bierstadt had lobbied Congress for a commission for two paintings, asking an outrageous $40,000 each. He dropped the figure to $30,000, but with no luck. It was not until nine years later, long after the '60s boom had collapsed, that he finally placed a picture in the Capitol. It was not one of his great Rockies paintings but a rather conventional historical scene, *Discovery of the Hudson*. And it brought him $10,000. Today it stands in a members' stairwell on the House of Representatives side.

Still later he sold *Settlement of California, Bay of Monterey*, another historical pageant, to Congress. It now flanks the other painting in the House wing.

Another time he tried to go over the heads of the selection committee at the Philadelphia Centennial of 1876. Perhaps in revenge, a committee of his American peers rejected his entry in a Paris exposition two years later. They found his relentless self-promotion irritating.

At the peak of his fame, in 1869, a Boston estate suddenly put up for sale what were billed as Bierstadt's early works, some of which the artist furiously disowned. The battle was fought in the letters columns of newspapers, and at the end of it some of the paintings (possibly daubs from his boyhood apprenticeship) sold for as little as $30. This did not help his market value.

It is said that the 1876 Centennial marked a watershed of American taste. If so, Albert Bierstadt was on the wrong side. America was changing fast. The transcontinental railroad had been completed at last in 1869, and thousands of Americans were able to see for themselves the fabled land of the West.

It was a shock. The Rockies looked nothing like the Alps. Forgetting that they were seeing only a narrow strip of the continent along the roadbed (what Anne Farrar Hyde calls "tunnel vision" in her fascinating account of the opening of the West), Americans were disappointed by what they saw along the transcontinental route: the endless miles of desert and barren wastes, the harsh mountains of stark rock unrelieved by green.

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They had been expecting a wonderland; now they would have to develop a whole new esthetic of scenery, an American Western landscape that had nothing to do with the Alps. And that is what happened. Americans learned to appreciate their rugged wilderness for itself. The new esthetic was in fact evolving—which was bad news for Bierstadt.

People couldn't remember what they had seen in those towering fantasies he had painted. The jingoistic enthusiasm expressed by the Manifest Destiny crowd was by now merely quaint. Americans by the shipload had been to France, had seen the works of Corot and the Barbizon School. Instead of the literalism and bald, bright studio light of midcentury art, they looked for a more intimate vision, a landscape of the mind perhaps, anyway something poetic and subjective. Innes; Whistler; the intimate reigned now.

Much influenced by European art, critic James J. Jarves found that "the Düsseldorf school is a millstone around our necks." Others found Bierstadt's landscapes too theatrical, "commonplace" and "entirely dead to all sense of what is properly termed color."

Bierstadt soldiered on. The big works looked less spontaneous, more mannered. He was repeating himself. A number of important works burned in a studio fire. He continued to travel, and went back and forth to the Bahamas to be with his ailing wife.

He still had a popular following and still showed his mastery now and then: *The Shore of the Turquoise Sea*, a stunning five-foot-wide portrait of a Caribbean shore (p. 93), says all that can be said about the lovely translucence of a curving ocean wave. *The Last of the Buffalo*, done in 1888, the last of his great Western panoramas, was rejected for Paris as too big (6 by 10 feet) and outdated in style (p. 93). Some found it outdated in subject, too; it showed a feathered Indian spearing a buffalo, whereas everyone was aware that Indians had guns and that the buffalo was already all but extinct. They missed the point: it was supposed to be a farewell to the past, a coda, a last look at the romantic neverland of his Western paintings.

A difficult period of obscurity

After his wife, Rosalie, died in 1893, the artist tried to recoup financially by offering five works to Congress. He wanted $65,000, the press threw a fit, and Congress refused. In 1894 Bierstadt married Mary Stewart, a New York banker's widow, but even this infusion of money didn't help much, and he drifted into obscurity. He died in 1902, a forgotten man.

But now the surprise. A new generation, looking over Bierstadt's work, discovered the oil sketches that he had kept in his studio. They were a delight. For example, *Surveyor's Wagon in the Rockies*, his tiny (8 by 13 inches) study of a surveyor and his horse standing before a Western panorama: the figures are fragile, made with a few sure strokes, yet the picture itself gives a grander feeling of immensity than many of his wall-size works.

For example, *Wreck of the "Ancon" in Loring Bay, Alaska* (p. 94): detained for five days in an Alaskan fishing village when the steamer went aground, Bierstadt finished five-dozen studies of the scene using his laptop paintbox. The sharp lines, clean yellows and blues, superb handling of distance and fog, understated sense of abandonment, all show the power of a master. He has truly captured a moment.

There is an early study for *Sunlight and Shadow*, one of his first major successes, that shows a quiet shaded porch outside a German church. A clear and simple statement, its modesty makes a telling contrast with the finished version, to which he has added various compositional and narrative elements.

Too bad he didn't just do the sketches and let it go at that. But then, Bierstadt would not have been Bierstadt. And we would not have those wonderful visions, those vast towering creations of rock and ice and cloud, those canvases so enormous, so breathtaking, so polished and painterly and just plain gorgeous, that the unwary viewer, coming upon one in a museum, starts back a bit, rolls the eyes and mutters, "Whoa!"

Fine Arts Museums of San Francisco

Sunlight and Shadow is seen in two renditions: the oil painting (above) and its antecedent, the oil study of 1855 (opposite). One of his earliest oil sketches, it shows the brilliance and promise of the young artist.

Newark Museum

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In Philippine waters a diver encounters a *Cephea* jellyfish; proximity and distortion make it appear much larger than its two-foot diameter. Frilly structures are flexible mouthparts called "oral arms."

Stunned prey items are channeled along folds in the arms until they reach the stomach in the central mass.

By Jack and Anne Rudloe

Jellyfish do more with less than almost anything

Forget about stinging blobs of slime. These are biological marvels, food for sea turtles and human epicures, and by the way, beautiful

As we approached the pass between the barrier islands of Apalachicola, Florida, we began seeing the cannonballs, a white one here and a purple freckled one there, each pulsating, all moving in the same direction. Soon the soccer-ball-size jellyfish were so thick they turned the ocean into a vast polka-dotted sea. There were millions of them, moving crosswise to the currents, pulsing along in formation, filling the water from surface to bottom.

Also called "cabbage heads," members of the species *Stomolophus meleagris* are among the most unusual of jellyfish (known collectively as medusae), their stubby, tentaclelike mouthparts modified into filters to capture the microscopic prey that teems in the low-salinity waters around river mouths. Dining exclusively on tiny clam, oyster and barnacle larvae and copepods generally less than a half-millimeter in size, the fast-swimming cannonballs consume up to 65,000 individual prey items a day.

"That's a bad sign," Edward Keith, captain of the *Lady Murl II*, a 68-foot shrimp trawler, announced grimly. "If they're this thick in the bay, we sure as hell won't be able to drag out in the Gulf. We can forget shrimping." When the jellies move in, clogging the water, he knew, the sharks, the rays, the shrimp and everything else moves out. A net gorged with stinging jellyfish was guaranteed to burst the webbing if he set it and then tried to hoist it out of the water.

We turned and fled, heading back offshore, leaving the half-mile zone of medusae-spotted sea behind, our prop churning and chopping up cannonballs as we

More than stinging blobs of slime

Jellyfish in the Palau islands of the western Pacific congregate to create their own green, watery universe.

went. Scientists are puzzled by the schooling behavior of the pulsating parachutes. Ron Larson of the Harbor Branch Oceanographic Institution in Fort Pierce, Florida, has spent years studying the explosive population growth rates and behavior of *Stomolophus*. "They don't have enough of a brain to communicate with each other, so it's a mystery how they all manage to stay together," Larson says. "In all probability, they find a patch of food and stay there. They swim around until they consume it, all working independently so that it seems like a group aggregation. Yet somehow they maintain their individual spaces—you almost never see them colliding."

Members of the 9,000-species phylum Cnidaria (pronounced nigh-dear-ee-ah), which includes the reef-building corals, jellyfish are water coalesced into life. Washed up on the beach they seem slimy blobs, but in the sea, as the photographs on these pages make clear, they are creatures of fragile beauty. Elegant rather than primitive, they "invented" the neuron, the basic brain cell with which you are reading these words, as well as the muscle cells we depend on to move us about. And they were among the first to develop weapons that discharge coiled darts of stinging poison. Jellyfish range in size from tiny transparent hydromedusae, a few millimeters across, to massive red and purple deep-sea forms more than 6 feet in diameter with 100-foot-long tentacles. They occupy virtually every aquatic niche, from the shallowest muddy mangrove swamps to icy abyssal ocean trenches. Stalked jellyfish live attached to seaweed in the surf on New England coastlines, brackish forms swim up rivers, and a few tiny ones inhabit freshwater lakes and streams.

A jellyfish is only two thin layers of cells covering the inner and outer surfaces of a saucer-shaped mass of nonliving gelatinous material. Add to that an arsenal of viciously stinging tentacles, some primitive tissues for reproduction and digestion, and you've got some of the most exquisite and deadly creatures in the sea.

"Hot jelly" protects the shrimp

Later that night aboard the *Lady Murl II*, the net splashed into the tepid sea, and we began our first drag. Two hours later, we wished we hadn't. When the net was hoisted up, it rained fire. Our faces and eyes burned as stinging nettles, moon jellies, sea wasps and a few stray cannonballs swirled around the rolling deck in a mucousy matrix of stung-to-death croakers, catfish, squid and too few shrimp to keep dragging. We hung up the net, pushed the mess through the scuppers and retreated. Man was no match for this dab of 2 percent protein, 2 percent mineral salts and 96 percent water. Once again the "hot jelly," as the shrimpers call them, were the protectors of the shrimp.

A hapless fish, shown here larger than life, is held in the sea-colored tentacles of a Portuguese man-of-war. The jellyfish harpooned its prey with microscopic barbs, then paralyzed it with a toxin before eating it.

These so-called primitive creatures are one of the few groups that continue to hold the human superpredator at bay. Humans and their pollution rarely stop them. In fact, *Chrysaora*, the stinging nettle, seems to thrive in waters overenriched by sewage pollution, so much so that stinging nettle congregations have clogged the intake pipes and the cooling systems of power plants. Every attempt to control them on swimming beaches—nets, jellyfish-specific poisons, even biological controls—has failed. *Cassiopea*, the mangrove jellyfish, is one of the most annoying stingers from the human point of view. Its population often explodes in the polluted canals of the Florida Keys.

All the true jellyfish sting—it's their primary means of capturing food—but some are worse than others. We feel only the ones whose tiny barbs can penetrate our skin. Their sting (the name of the phylum, "Cnidaria," means "stinging thread") comes from millions of microscopic harpoons, coiled like springs, ready to be fired by a touch or a chemical stimulus. Their toxins disrupt the synapses and stop the transmission of nerve impulses; their enzymes cause searing pain.

Tiny transparent sea wasps in Australia may be more of a danger to people every year than are sharks. These boxlike animals have the fastest acting, most potent venom in the world. And when lifeguards along the beaches of southern Florida see the Portuguese man-of-war bobbing on the surface like its namesake, whistles blow and people flee the sticky tentacles and searing stings. The cost to tourism in empty motels and restaurants runs into the millions.

The Portuguese man-of-war, *Physalia physalia*, is agonizing to people, but loggerhead sea turtles love it. They use their flippers to brush the jellyfish away between bites as they gorge on the pink-and-blue floats, eating until they become intoxicated, their eyes swollen half shut from the stings. Hordes of the big yellow turtles, which often weigh 400 pounds, have been observed swimming among armadas of physalia, so dazed and enraptured with eating them that fishermen have been able to get close enough to poke the turtles with an oar. Leatherbacks, giant sea turtles

Jack Rudloe has written five books about the sea; his wife, Anne, is a marine biologist and writer. They reported on shrimpers versus turtles in December 1989.

A jellyfish discovers its mistake of getting too close to a "walking stomach" as starfish pulls the jelly into its mouth. Marine turtles and giant ocean sunfish are the chief predators of jellyfish, but in the Orient they are eaten by humans too.

The cold-water lion's mane jellyfish can grow to six feet across, with tentacles stretching out 100 feet.

that weigh up to 2,000 pounds, and 1,500-pound giant sunfish—the largest of all true fishes—feed almost exclusively on jellyfish.

Humans eat them too. In China, Japan and Korea, a dozen of the more rubbery species support a major fishery. Properly salted and dried, with their stinging tentacles removed, they look like leathery white pancakes and taste like oyster-flavored rubber bands. Not only are they expensive, up to $12 each, but they are considered to be a cure for bronchitis and high blood pressure as well. The demand is so great that producers are now experimenting with artificially flavored "analog jellyfish" made of chicken eggs.

So uncomplicated is jellyfish anatomy that one would think the creature could do little more than drift passively in the currents. Many jellyfish species do just that, using little oxygen or energy, hardly moving in the abyssal depths as they spread their fishing tentacles and snare their food.

Yet sitting on our dock in Panacea, Florida, we've watched cannonballs and pink stinging nettles with their diaphanous, fragile bodies delicately picking their way around wharf pilings, despite waves and currents, somehow avoiding contact with the sharp oysters and barnacles that could shred them in an instant. When the sea is calm and there is hardly a ripple, the closely related ctenophores (pronounced tea-ne-fours), or comb jellies, float lazily on the surface. But when the winds begin to blow and the waters roughen, they sink down into the depths.

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Profile in Quality #28: Commitment

John Jordan realizes that precise spot welds are essential when building a quality car.

John is one of over 366,000 Ford people worldwide who are committed to making quality Job 1.

Our goal is to build the highest quality cars and trucks in the world.

Ford

Ford, Mercury, Lincoln, Ford Trucks.

Ford Motor Company

Buckle up — together we can save lives.

A few jellyfish, such as this New England species attached to a blade of sea grass, lead a sessile life.

As clear as glass, ctenophores are often magnificently bioluminescent, giving off a fiery blue light by night. When the sun catches them by day, they refract the sunlight into all the shimmering colors of the rainbow.

For all their beauty, the approximately 80 to 100 described species of comb jellies are voracious predators of the microscopic life that teems in the ocean, eating machines that vacuum up their weight in oyster spawn each day, sucking in fish eggs and infinitesimally tiny, transparent larvae, along with swarms of copepods. If we could see them from a prey's point of view, they might appear as giant flashing zeppelins, sweeping up everything in sight.

In recent years, our own "zeppelins" have appeared in the jellies' darkest, deepest world. Research submersibles have revealed a new universe, one we never knew existed, where new species are found on virtually every visit. This world occupies more than half of the planet's entire living space, and jellyfish are among the dominant organisms.

At depths below 200 to 600 meters (the exact boundary varies from locality to locality), the world is dark and cold, but it glitters and flashes with the luminescence of its creatures. Almost everything, be it jellyfish, squid, worm or deep-sea fish with bulbous eyes, may create its own light, using it to see, to communicate, to find a mate, to attract a meal.

Complex and beautiful, transparent, red or purple, these deepwater jellyfish feed on whatever encounters their deadly tentacles. So fragile that they fragment at

While it looks like a cross between an extraterrestrial and its spacecraft, this creature is really a helmet jellyfish photographed in the clear water of an Antarctic winter. The jelly is swimming close to the camera: it is actually about the size of a gallon jar.

Great Seats Still Available for Great Performances

The Colored Museum

A controversial — and hilarious — look at contemporary African-American values.
February 1

Alvin Ailey American Dance Theatre

DANCE IN AMERICA:
The legendary past and the vibrant future of this unique dance company. **February 8**

Peter Sellars Directs: Così fan tutte

Mozart's last opera...now set in a typical American diner. **February 15**

Uncle Vanya

David Mamet translates Chekov's classic for modern audiences.
February 22

The Fred Astaire Songbook

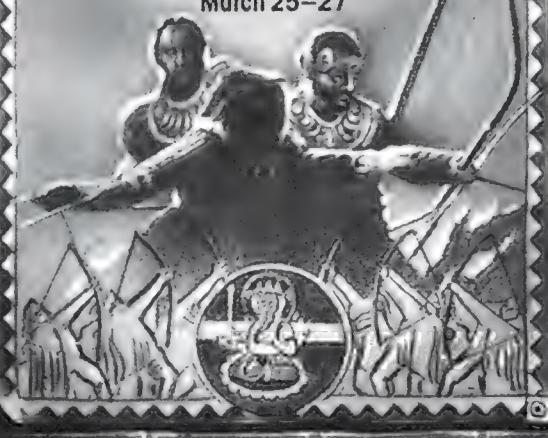
The hit songs Astaire made popular. From Gershwin to Porter.
March 8

Richard Tucker Vocal Gala

With some of the world's greatest opera stars.
March 15

The Mahabharata

Peter Brook's 6-hour film of the Hindu epic.
Airing on 3 consecutive evenings.
March 25–27



A Masked Ball from the Metropolitan Opera

A dazzling new production of this great Verdi opera.
April 10

The Margot Fonteyn Story

A profile of the legendary dancer.
(Repeat)
March 1

Catch all these Great Performances

Check local listings for time and channel.
Dates may vary in some areas.

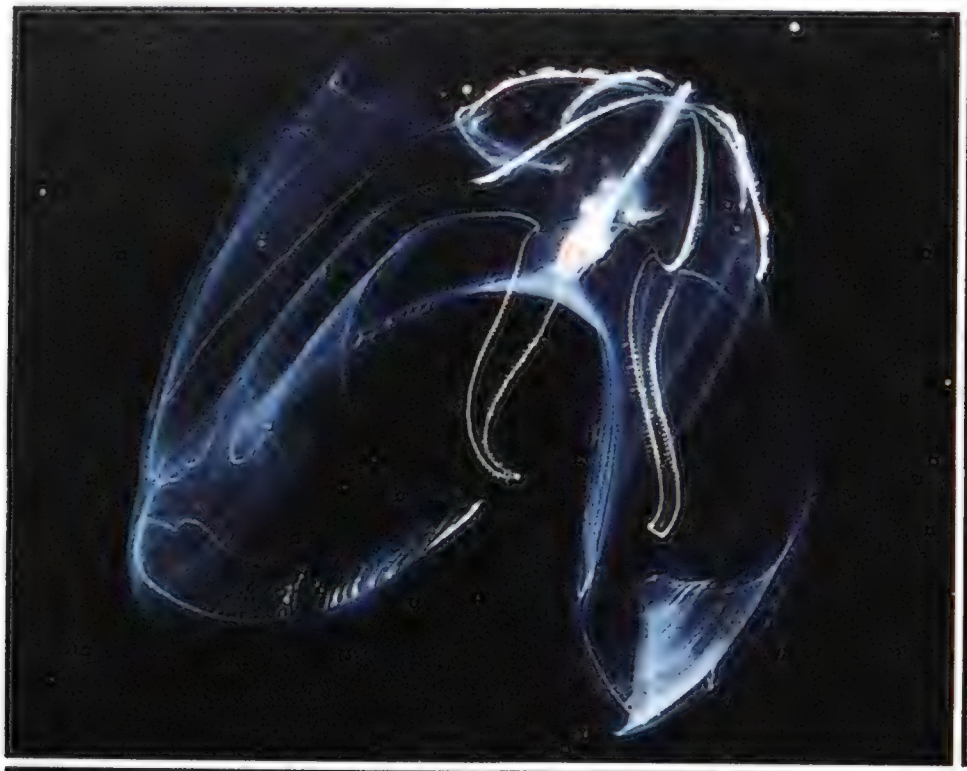
TEXACO

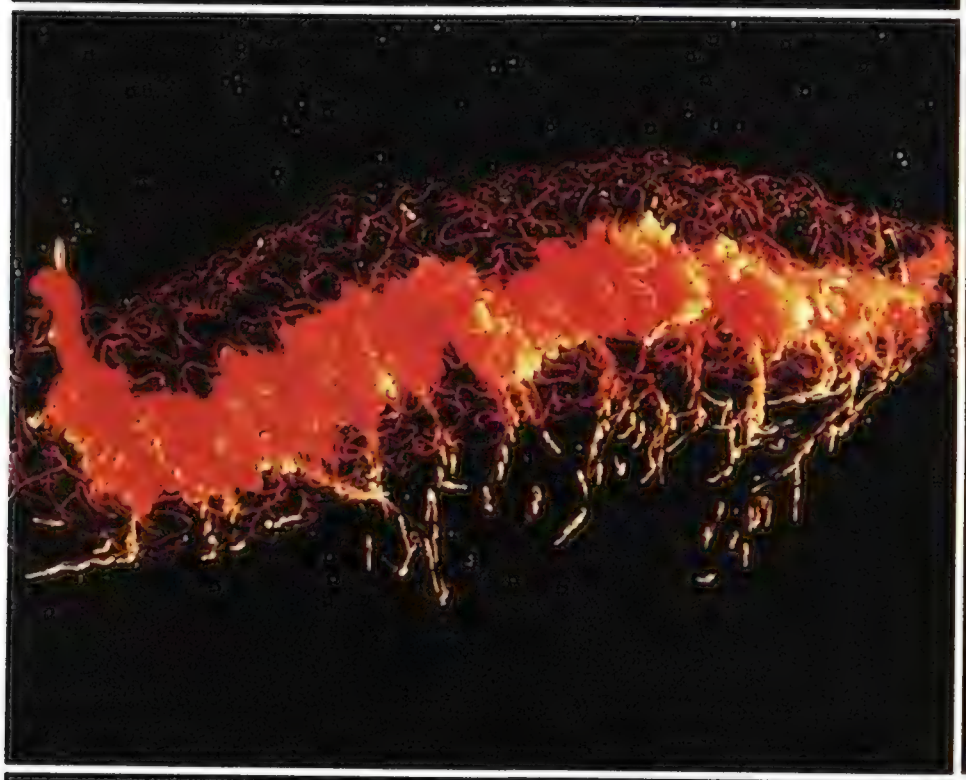
MARTIN MARIETTA

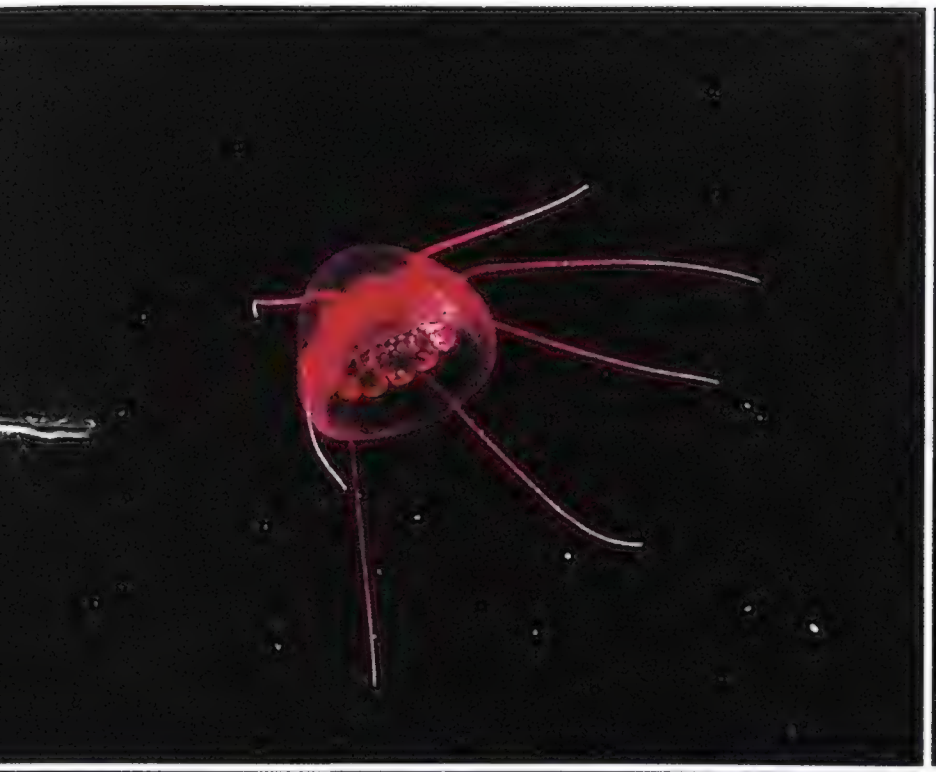
The Corporation for Public Broadcasting, The National Endowment for the Arts, and Public Television Stations.

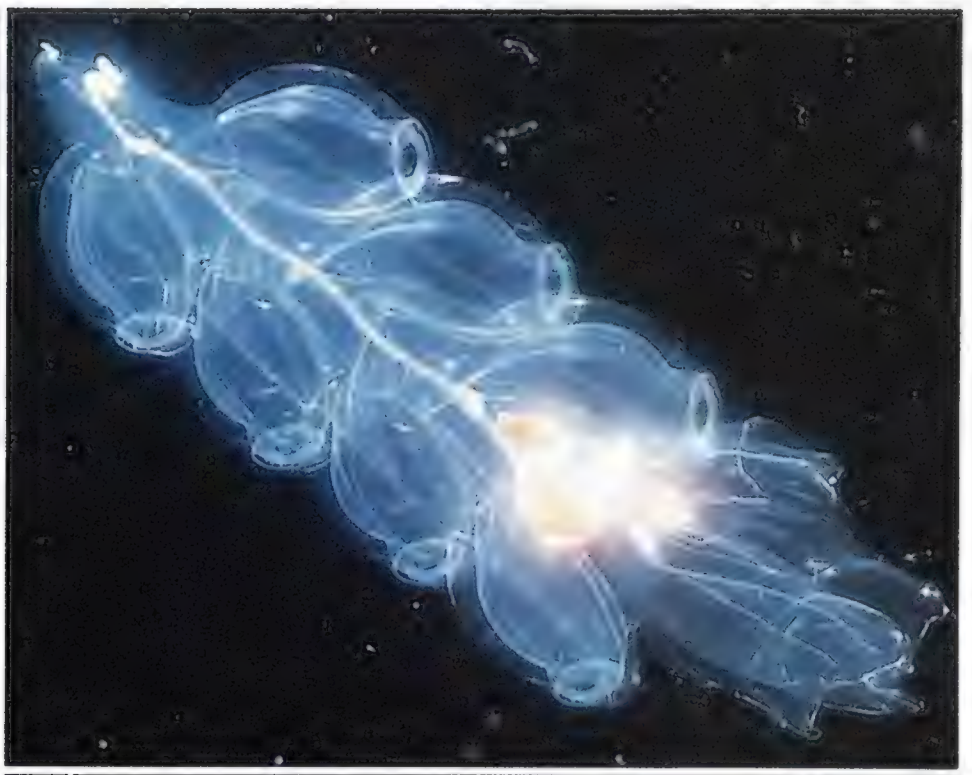
A national presentation of Thirteen/WNET in New York.

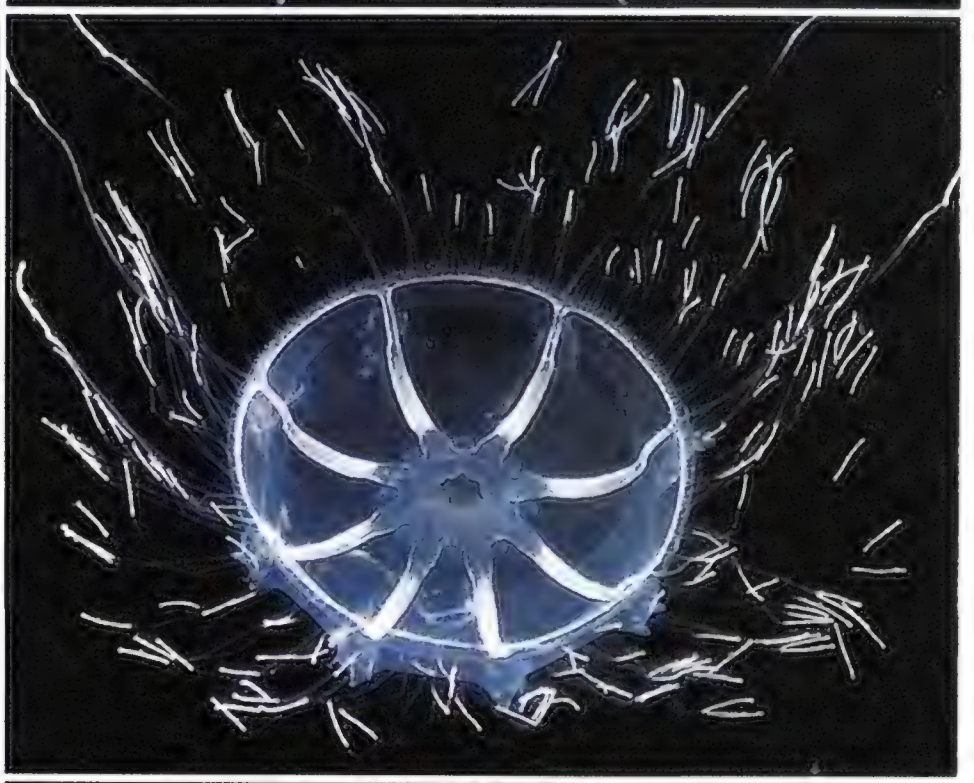
A sampling of jellyfish, most glowing in the dark, discovered by biologists from submersibles 500 to 2,000 feet down











Washed up on a Florida beach, cannonball jellyfish have lost their shape but not, be warned, their sting.

When this fragile-looking but fiercely stinging sea nettle appears off Atlantic beaches, swimmers depart.

the least touch of a current and sometimes melt from the illumination of a submersible's spotlight, these otherworldly creatures have rarely been brought to the surface alive. One of the deep-sea comb jellies emits a bioluminescent ink that blazes in blue-green sparks like underwater fireworks as the jellyfish swims away from a disturbance. Another hangs motionless in the water, it's six-inch sticky transparent bell expanded. When a tiny crustacean blunders into the trap, the jellyfish contracts around it. Imagine walking absentmindedly into a glass door in the dark, but instead of getting a bump on the forehead, you're stuck tight and then digested.

Many of these deep-sea species routinely outmaneuver our most sophisticated submersibles, evading capture by scientists despite an apparent lack of swimming ability. "You harass them with this giant submersible and it creates pressure currents, and they scare away from it," Tom Bailey, a scientist at Harbor Branch, ruefully laughs. "It's amazing how good they are at avoiding it. Here we are with this high-tech equipment getting outrun by a lowly jellyfish."

When that happens, often as not it's a new species, unknown to science, that swims away into the darkness. Who can guess when it will be seen again. "What's neat about a submersible," Bailey continues, "is that you have a good shot at seeing an animal that has lived down here a hundred million years. It's not just that you're the first human to see something that's probably existed on this Earth for a hundred million years, but it's all the colors, the spectacular forms, the tentacles, and you wonder what the hell the colors are for in such a dark world.

"The diversity is overwhelming," says Bailey. "I don't think people appreciate it. They think of a jellyfish as a repulsive blob that washes up on a beach. But catch a bright-red jellyfish with yellow tentacles in the spotlight and it's spectacular. When you see how diverse they are, the beautiful colors, reds and yellows glimmering and luminescing, you wonder why it should be that way."

These pulsating parachutes have been around for more than 650 million years. Their impressions have been found in Cambrian sandstone in Australia, and they'll probably survive as long as Earth has seas. In this time of disappearing species and fear for our planet, a wonderful treasure trove of new species remains to be described, named and marveled over. Of all these jobs, perhaps it is the marveling that will be most important. We can all wonder why it should be that the water came to life.

This deep-sea jelly, related to the lion's mane, has lost most of its tentacles, probably to marine turtles.

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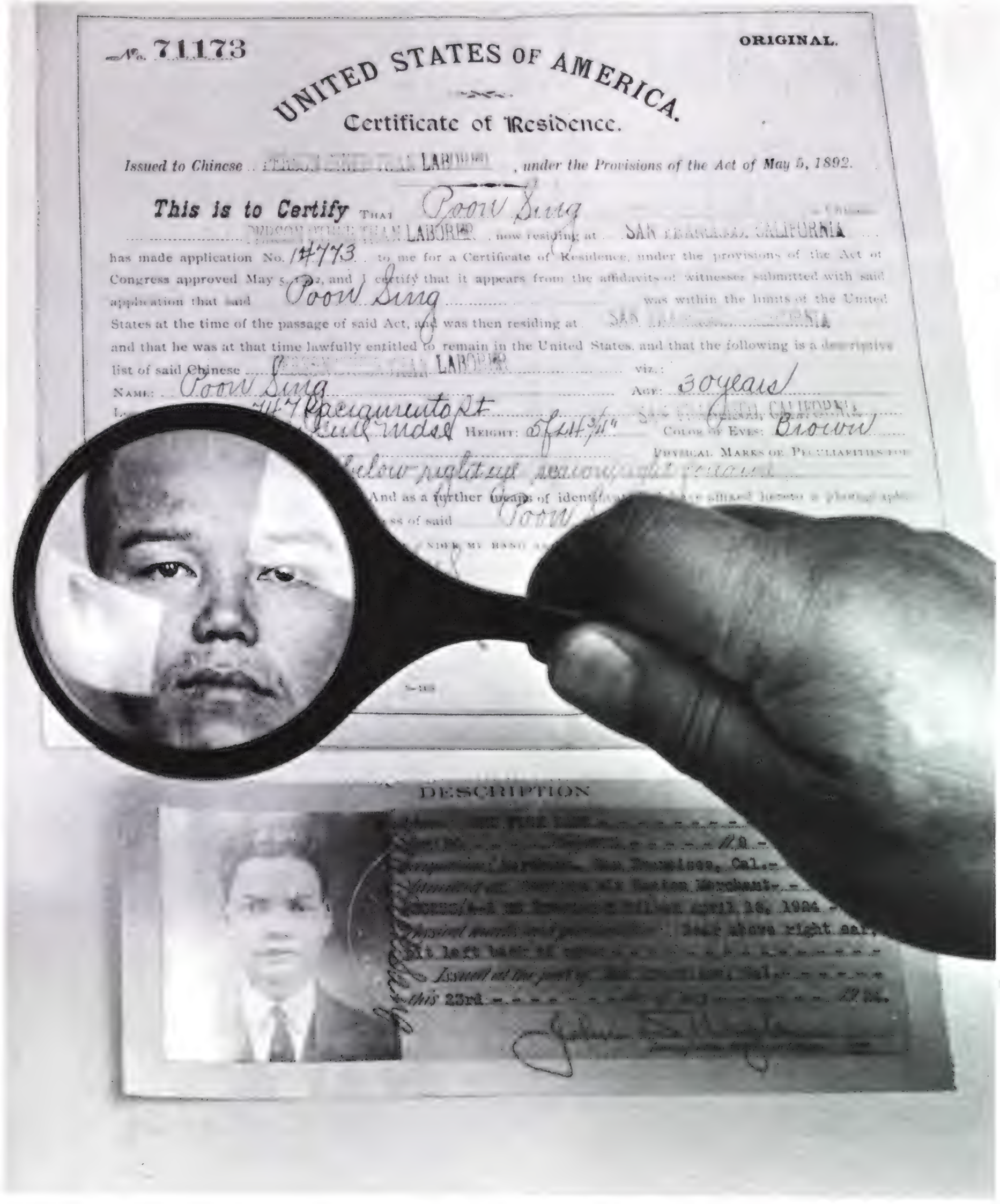
No. 71173
ORIGINAL.
UNITED STATES OF AMERICA.
Certificate of Residence.
Issued to Chinese ... LABORER ... under the Provisions of the Act of May 5, 1892.
This is to Certify THAT Poon Sing
... LABORER ... now residing at ... SAN FRANCISCO, CALIFORNIA ...
has made application No. 14773 ... to me for a Certificate of Residence, under the provisions of the Act of Congress approved May 5, 1892, and I certify that it appears from the affidavits of witnesses submitted with said application that said Poon Sing ... was within the limits of the United States at the time of the passage of said Act, and was then residing at ... CALIFORNIA and that he was at that time lawfully entitled to remain in the United States, and that the following is a descriptive list of said Chinese ... LABORER ... viz.:
NAME: Poon Sing
AGE: 30 years
HEIGHT: 5 ft 4 3/4 in
COLOR OF EYES: Brown
PHYSICAL MARKS OR PECULIARITIES:
DESCRIPTION
Issued at the port of San Francisco, Cal.
this 23rd

With a magnifying glass, an expert examines an old Certificate of Residence for Poon Sing, and another document describing Chu Pick Sang (below); each man came as a "merchant" despite hated Exclusion Act.

By Donald Dale Jackson

'Behave like your actions reflect on all Chinese'

With brilliance and a stoic willingness to persevere, Chinese-Americans remember, their people climbed the 'Gold Mountain'

Realtor Roberta Yee was born in China: "You knew where you weren't wanted. To this day I know that."

As the railroad pushed through the Sierra Nevada in 1865, the men from China toiled from sunrise to sunset, six days a week. Their pay started at $26 per month and could reach $36. They worked in crews of 12 to 20, each crew with a cook who also furnished hot water for sponge baths.

When the crews reached a perpendicular promontory called Cape Horn they had to gouge a roadbed out of a sheer granite cliff more than a thousand feet above the American River. Chinese workmen lowered down the rock face in wicker baskets had to drill holes for explosives, light the fuses and then make as swift an exit as they could before the powder blew.

Roberta Yee, a real estate broker in Palo Alto, California, remembers hearing about the rail workers from her elders: "You know that expression 'a Chinaman's chance'?" she asks. "I always heard that it started with those men that went down the cliff in baskets."

Slight and quiet, the Chinese workers didn't look like railroad builders. The Central Pacific hadn't wanted to hire them at all in the race for the historic coast-to-coast linkup in Utah. In fact, officials took on these pigtailed immigrants only because they couldn't recruit enough whites to do the job. At least a thousand perished in building the roadbed, some after taking that Chinaman's chance, some in avalanches, some from blistering heat or disease or simply overwork. But they worked so hard and so well that hundreds more were hired. In 1869 a group of Chinese and Irish workers laid a record ten miles of track in just under 12 hours, though the Chinese and their sacrifice were barely mentioned in the flossy speeches that year when the historic meeting of the rails was celebrated.

Things had been different a generation before the railroad building, when many Chinese began arriving in California. In 1849 and 1850, when the discovery of gold ignited a worldwide rush to the tawny Sierra foothills, a Chinaman's chance seemed as good as anyone else's. "The Celestials," one newspaper declared, in reference to immigrants from the "Celestial Kingdom," as China called itself, "are good citizens, deserving of the respect of all." When California joined the Union in 1850, blue-coated Chinese had a prominent place in the admission-day parade through downtown San Francisco. They tossed firecrackers and pinwheels as they marched, and a speaker at the ceremony afterward spoke admiringly of the ethnic mix that gold had lured to California. "We . . . meet here today as brothers," he proclaimed. "Henceforth we have one country, one hope, one destiny."

They called their new home Gum Sahn—Gold Mountain. Then and later the great majority of Chinese immigrants came from a single province, Kwangtung, in southern China. Many grew up in the city of Canton. In the 1850s they began sailing under the "credit-ticket" system, with a broker advancing passage money to be repaid out of future earnings. Their goal was to make a stake and return to China and their families. They saw themselves as sojourners, and the sojourner mentality persisted even when the years

Photographs by David Weintraub

stretched into decades and the decades into lifetimes. China was home. They went home to marry and to father children and then returned here. They sent money home regularly and created little self-contained islands of China—Chinatowns—mostly in large cities.

Writer Connie Young Yu, 49, of Los Altos Hills, California, visited China seven years ago to see where her immigrant ancestors started from: "If you saw the villages they came from you'd know why they left. They didn't come for freedom but for survival. My great-grandfather worked on the Central Pacific railroad. He learned a little English and they made him foreman. Those men never complained. It was like one generation simply sacrificed itself."

"If you have a daughter," a Cantonese folk song warned, "don't marry her to a Gold Mountain man. Out of ten years, he will not be in bed for one." In 1852 the number of Chinese arrivals in California exceeded 20,000. Toting their belongings in bags suspended from bamboo poles across their shoulders, the newcomers were organized into companies by Chinese associations. At the goldfields they provided their own rice and dried fish, and their own diversions, mainly gambling and opium. They specialized in digging in placer sites that white miners had abandoned as played-out.

Thomas Chinn, 81, a scholarly man who used to own a typesetting business in San Francisco, is the grandson of a forty-niner. Like many older Chinese-Americans he has tried to trace his family's roots in Gum Sahn: "My maternal grandfather got to San Francisco in September 1849. He went back to China to marry and left his wife there. He mined tailings and worked on the railroad. I don't know where he died. I've checked records all over the state. They aren't much help because they often got the names wrong. I don't think I'll ever know."

By the 1870s the easygoing cordiality that greeted the first Chinese in America had been replaced by an ugly resentment that often boiled into violence. Racism and economic fear led many Westerners to believe that the Chinese, who were willing to work cheap, were stealing their jobs. A "Workingmen's Party" arose, demanding that "the Chinese Must Go" and intimidating firms that hired them. An English-Chinese phrase book from that time shows a little of what the Chinese were up against. Its sampling of

The author writes frequently for SMITHSONIAN. *His father, Zalph B. Jackson, was an immigration official at Angel Island during the mid-1930s.*

Chinese by the thousands helped build America's first transcontinental railroad. Many died as a result. The expression "a Chinaman's chance" is said to describe survival odds on Chinese chosen to lay dynamite charges for roadbeds that had to be cut out of sheer cliffs.

With Alcatraz and Angel Island in distance, Connie Young Yu shows off family pictures, including shots of Nationalist Chinese League of America. "If you saw the villages they came from you'd know why they left," she says of her ancestors. "They didn't come for freedom, but for survival."

frequently helpful phrases includes "He took it from me by violence," "He cheated me out of my wages" and "They were lying in ambush."

In 1871, a mob enraged by the shooting of a white man killed 19 Chinese in Los Angeles. In California's Central Valley, where the Chinese found work on reclamation projects and as tenant farmers, they were hounded out of one town after another, a time they remember as "the driving out." A particularly bloody outburst came in 1885 in Rock Springs, Wyoming. There, coal miners infuriated by the refusal of Chinese coworkers to join in a strike attacked their camp, burning 79 houses and killing 28 men.

Legal persecution took the form of taxes and statutes aimed at their livelihood, their customs and even their looks. Chinese families had to pay special taxes. Their children were barred from local public schools. A San Francisco ordinance, vetoed by the mayor at the last moment, would have required that the queues of Chinese jail inmates be cut off. Other harassments included laws making it illegal to carry baskets suspended from poles while walking on sidewalks, as Chinese laundrymen did, or to rent rooms with less than 500 cubic feet of space per person, as most Chinese had to do. The courts even prohibited Chinese from giving testimony in cases that involved whites.

By 1880 Chinese immigrants represented only .002 percent of the population, yet the "Chinese Question"—which boiled down to finding ways to keep them out—had become a major national issue. Two years later Congress passed the Chinese Exclusion Act, the first immigration law in America's history designed to bar a specific nationality. The law suspended the immigration of Chinese laborers for ten years, though it did permit the entry of teachers, students, merchants and travelers—a loophole the Chinese would learn to exploit. Subsequent legislation extended the ban on laborers indefinitely. In 1913 California added another twist of the knife by prohibiting Chinese, as "aliens ineligible for citizenship," from owning land.

The Chinese responded to prejudice and persecution in two ways. First, they created an insulated society-within-a-society that needed little from the dominant culture. Second, they displayed a stoic willingness to persevere, and to take without complaint or resistance whatever America dished out.

"I was in downtown Portland once with my parents a long time ago," Thomas Chinn recalls. "We went to first one restaurant and then two others and they wouldn't serve us or even sell us bread. My father spat

Gold rush of 1849 brought first wave of Chinese to America. In four years numbers rose from 54 to 20,000.

By 1877, community groups helped new arrivals get settled. Inset: immigrants on their way to new homes.

on the sidewalk, and a policeman came over and told him to clean it up. He took out his handkerchief and wiped the spittle off the sidewalk."

The Chinese were neither the first nor the last immigrants in America to tote their culture in their baggage. What set them apart—and this is true of other, more-recent Asian immigrants to the United States as well—was the extent of their mutual support systems. They established their own schools taught in their own language, read their own newspapers and attended their own operas. Wherever possible they made a living working with, and selling to, one another. Groups of merchants organized de facto banks by putting money into a pool from which anybody in the group could borrow. They banded together in associations based on their home districts in China.

"Our self-sufficiency was a specific response to persecution," Connie Young Yu explains. "The district and family associations were employment agencies, welcome wagons, labor contractors and rooming houses. They also arranged the shipment of bones back to China." (Quite separate from such associations were the protective societies, called "tongs"—from the Cantonese *t'ong*, or "hall"—which ultimately degenerated into feuding, criminal gangs.)

The face Chinese immigrants showed to strangers was impassive or agreeable, never angry. They swallowed their anger. Chinese parents taught their children to *bai hoi*—stand aside—to avoid conflict. "We kept our place, stayed where we belonged," Roberta Yee remembers. "You knew where you weren't wanted. To this day I know that." Controlling anger preserved dignity and asserted a deeper strength, but is an approach that young Chinese condemn in retrospect.

"A white friend once told me, 'You people are used to suffering,'" says Philip Choy, 64, a San Francisco architect who has written about Chinese-Americans. "We *were* passive for so long; we didn't make waves. This generation accuses us for that, but they don't realize that the threat was always there. Always."

The years between the 1880s and the 1930s were a test of their tenacity and ingenuity. The Chinese were not yet fully American, either in their own eyes or in the view of the U.S. Government or of Americans generally. Most were still clustered in Chinatowns and rural areas in the West, with small contingents in the South and East. They worked on Arkansas farms and on railroads in Mississippi (where, one story has it, the town of Canton took its name from Canton, China), and—as strikebreakers—in the Sampson's shoe factory in North Adams, Massachusetts. Chinese immigrants were still predominantly male: only 5 percent of the roughly 90,000 here in 1900 were women.

The Chinese found a small crack in the Exclusion Act, the provision that permitted merchants to immigrate, and mined it as assiduously as they had once washed gold at secondhand claims. Chinatown businesses took on "paper partners" who could then claim

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merchant status; stores were established for the purpose. The main result was to let wives come in, and so, gradually, increasing numbers of Chinese women began to arrive. Chinatowns now flourished in a number of large cities, but whites visited them rarely. Anyone who did so was usually treated to a hoked-up tour of opium dens and dim alleys haunted by slave girls (both of which did indeed exist). Restaurants courted American palates with chop suey and chow mein, both, like fortune cookies, first concocted on these shores.

Historically, the greatest boon to Chinese immigration was the 1906 San Francisco earthquake, which destroyed the city's birth records. Thereafter, thousands of Chinese could (and did) claim, with no evidence to refute them, that they had been born in the United States and thus were U.S. citizens. Almost more important, all their children, even those born in China, were then entitled to citizenship too.

Life was still cramped and mean in the 12-block Chinese enclave in San Francisco—known as Dai Fou (Big City); Sacramento was Yee Fou (Second City). Single men slept 10 and 12 to a room; several families shared a kitchen and bathroom. They couldn't get housing elsewhere because whites would not sell or rent to them; even venturing outside Chinatown meant risking harassment or worse. In cities there were two kinds of work, doing laundry or serving in restaurants. As late as 1920 nearly one-third of all Chinese in the labor force toiled in laundries. "When I was a kid in Chinatown we were afraid to cross the border at Pacific Street," Thomas Chinn remembers. "I started to do it once with some friends, and a bunch of Italian kids got out their knives, so we ran back. When my wife and I found a house we wanted to buy in 1930—it was out of Chinatown—a policeman visited us and advised me not to do it. He said some friends of his might make it tough on us if we moved there."

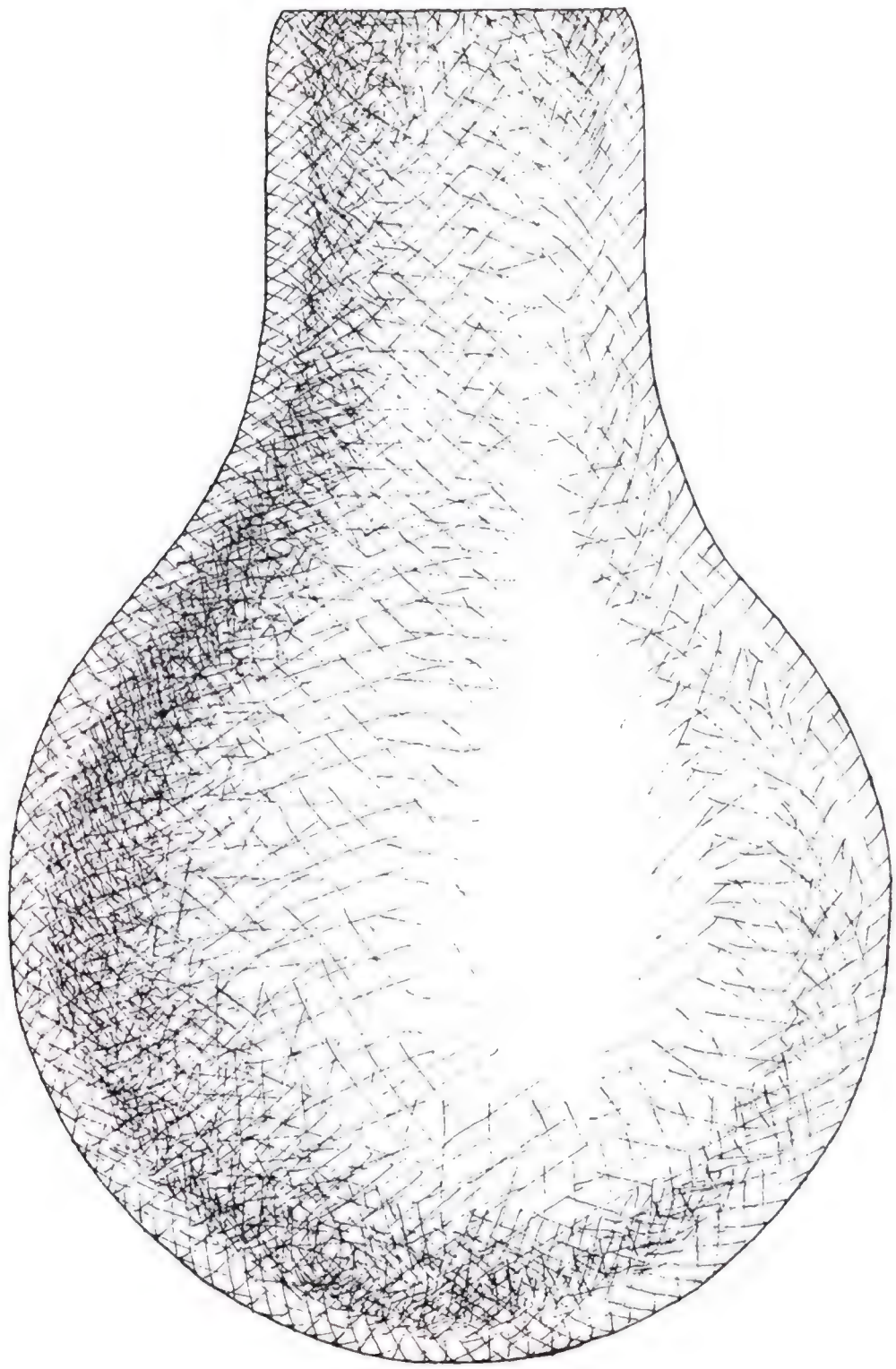
For Chinese sharecroppers and seasonal laborers the daily grind was equally gritty. They grew fruit and vegetables on Sacramento River delta land protected by levees they had helped build. In 1915 a group of Chinese in the delta founded an all-Chinese village they named Lockeport, later shortened to Locke, for the family that owned the land. With its blocklong main street of ramshackle buildings in the shadow of the levee, its Chinese school and stores and casinos, and its brothels (the only enterprises in town owned by whites), Locke became a mecca and a sanctuary.

Roberta Yee: "I grew up in Locke during the 1930s. When someone won the lottery at the casino, the kids would run to find the winner, hoping he'd give us something. I remember the *bok-bok* man used to bang a stick on a wooden box on the hour at night to say that all was well. My father had been a landowner in China, but in the delta he sprayed trees and picked fruit. He didn't feel persecuted. His investment was us kids; that's what it was all about."

Even that late, most Chinese in America still saw themselves as sojourners. On rare occasions one would let his mask drop to reveal the bitterness behind it. "When I young fellow I felt that I American," a merchant named Pany Lowe told a researcher in 1924. "Now I got more sense. I know I never be American, always Chinaman. I no care now anymore. . . . I think very few American people really know anything about Chinese." When a group of young Chinese-Americans

Ironic cartoon explores the moral contradictions of 1892 Exclusion Act, which cut off entry of all but a few Chinese. With smug approval from melting pot audience, the judge in effect says that expelling Chinese already here would be unfair, but exclusion in the future would be fine.

Everyone agrees we'll soon be needing more electricity. But there's little agreement on how to get it. Especially with the environment at stake. ❧ *Hydropower is limited by geography. Nuclear energy's problems continue to be debated. And the sun, the wind, the tides — they're all attractive, but none is economically practical on a broad scale yet.* ❧ *So, for at least the near future, we're going to have to rely, for the most part, on fossil fuels.* ❧ *But all fossil fuels are not created equal. One is clearly best for the environment. And that's natural gas.* ❧ *Natural gas produces less carbon dioxide emissions, it produces no sulfur dioxide, and it creates no particulates — the visible smoke you see. All of these are serious air pollutants.* ❧ *Further, because new high-efficiency, gas-powered generating plants are relatively simple to build, gas is also one of the quickest and cheapest ways for producers of electricity to increase their output.* ❧ *In short, if natural gas didn't exist, we'd have to invent it. As it is, nature has given us vast resources of natural gas right here in North America. It just seems natural to use them.*



© 1991 American Gas Association

were polled in 1935 on whether their future lay in America or China, three-fourths said China.

For a people who embraced the Confucian ideal that one's first loyalty was to the family, the rupture in family relations that accompanied immigration to America was the cruelest blow. Couples were sometimes separated for as long as 50 years. Though intermarriage with whites later became common, the sojourners wanted Chinese-born wives—"They like family more, better mothers, not spend so much," one man explained. When Chinese families finally began to flourish here they stuck to their old values—father received unconditional respect and obedience, everyone worked together. A whole family would run a Chinese store. The payoff came in a good education and better life for the next generation.

"My father's father came in 1881," says Connie Young Yu. "He hit a keno number the first month he was here and sent two $10 gold pieces back home. His parents thought he was already rich. When he went back to get married he brought raisins and lemon-scented soap—they loved that—and cotton cloth and cigars." It was a onetime piece of luck—everything else came hard.

"The family was like a cause," she adds. "It was the key to strength. My parents taught me their way of getting along here: always behave like your actions reflect on all Chinese. Education was everything. My father always said that they can burn your house or even Chinatown but they can never take away your education."

Immigrants whose citizenship status was questionable were held at the grim, prisonlike immigration detention station on Angel Island in San Francisco Bay. They were locked in barracks where bunks were stacked three high, women and the younger children in one large room, men in another. New arrivals were separated from relatives and friends so they couldn't discuss their testimony before immigration officers.

Most of the Chinese were boys from 15 to 21 who entered the United States illegally as "paper sons," using the loophole in the law that gave Chinese-born children of U.S. citizens the right to citizenship. The ploy began when a Chinese man already here claimed citizenship as American-born (someone calculated that

Historian Thomas Chinn holds mother's naturalization papers and certificate for Chinese Equal Rights given to his father. The grandson of a forty-niner, Chinn has searched without success for his grandfather's grave. "Records aren't much help," he explains. "They often got the names wrong."

if every such claim were true, each Chinese mother in San Francisco before 1906 would have had to bear 800 children). The "paper father" reported that he had sons in China. The boy's real family bought documents that included his ticket to America, a birth certificate stating that he was his paper father's son, and instructions on how to deal with the grilling by Angel Island's immigration officials. The boy adopted the name of his bogus father and tried to memorize hundreds of facts about the man's family and native village.

Confined for weeks, sometimes months, while awaiting interviews that would decide their future, some men etched their feelings in poems on the wooden barracks walls. "Nights are long and the pillow cold," one lamented. "Why not just return home and learn to plow the fields?" Another promised vengeance once he was released: "I will certainly behead the Barbarians and spare not a single blade of grass."

At the crucial interrogation the immigrant faced one or two inspectors, with an interpreter and a stenographer also present. The questioning sometimes went on for two or three days, with questioners pressing for minute details about the home village and the father's house—how many steps the temple had, the location of the pond, how many rooms in the house. The answers given by father and son were then carefully compared. The boys sometimes studied crib notes smuggled to them via the Chinese kitchen staff.

"I was 5 when I came through Angel Island with my mother in 1930," Roberta Yee recalls. "They herded us to meals in a chow line, and we ate with silverware instead of chopsticks. My father and brothers visited us every day and brought Bartlett pears from the delta. You could see the ferry pier from the room where we met. But it's the pears I remember best."

In the mid-1930s one of the inspectors at Angel Island was a young man named Zalph B. Jackson—my father. "Those kids never showed any expression," he told me. "We were trying to catch them lying with our questions. If there were, say, a half-dozen discrepancies we'd reject them." It was his recollection that most applicants survived the gauntlet of questions. Ronald Takaki, author of *Strangers from a Different Shore*, a recent book on Asians in America, estimates that only

Architect Philip Choy holds virulent anti-Chinese cartoon in which Public Opinion is about to blow up Chinese workers who are crushing American labor. "We *were* passive," he says, "for so long. This generation accuses us for that, but they don't realize that the threat was always there."

10 percent of the Chinese who passed through Angel Island were deported.

The disgrace for those who were, especially the women, could be unbearable. Paul Chow, 61, a retired highway engineer and head of a foundation created to restore the Angel Island site as a monument like Ellis Island (SMITHSONIAN, June 1990), has interviewed former detainees who remember suicides. "The women faced humiliation if they returned to China," he says. "They would take a shower, put on their best gown and hang themselves with a sash from a shower pipe."

Chow, a round-faced, sunny-tempered man, remembers that Angel Island was a taboo subject when he was growing up. "Whenever my mother would mention it, she'd say, 'Angel Island, shhh.' I thought it was all one word—'Angelislandshhh.' They didn't talk about it because of the shame. I found out later that my father bribed an immigration officer with $500 to get his card in 1922. That's why we kept quiet about it." The Angel Island station closed after a fire in 1940.

World War II brought the long-delayed turning point for America's Chinese. China was our ally against Japan, and Generalissimo Chiang Kai-shek was a world-famous leader. Chinese in the United States—the population had dwindled to 78,000—eagerly embraced the cause. Nearly a fourth of the Chinese adult males in the country either enlisted or were drafted (though many Chinese recruits were routinely sent to cook school). As civilians, Chinese workers were for the first time welcomed in higher-paying industrial jobs.

In 1943 Congress took up a bill to repeal the Exclusion Act. President Franklin D. Roosevelt supported it in a message to Congress. Exclusion, he said, was a "historic mistake." In December he signed the bill into law. The immigration quota specified by the act was hardly generous—permitting just 105 Chinese to enter each year. Applicants for U.S. citizenship, moreover, had to prove that they had entered the country legally. But the glad news was that the stigma was at long last gone and the door was open, if only a crack.

Becoming Americans, a dream deferred for a century, remained a slow adjustment for many. Even though he was born here, Philip Choy remembers that his own uncertainty persisted into the 1940s. "Even then a lot of us still thought we'd get our education here and then go home to China," he says. Choy became Americanized almost by default: "The war came, China was in turmoil, I got married—all of a sudden my roots were here."

Stereotyping had not evaporated, of course. In 1949, when the chief Chinese delegate to the United Nations rang the bell of the wrong room at a New York hotel, the woman who opened the door handed him her laundry without a word. Prejudice also remained. Some Chinese-Americans chose to work in fields like engineering, where their careers would depend more on skill than on social contact across ethnic lines.

But for a heartening number the passage to Americanization became natural and inevitable. "I have a photograph of my father wearing his San Jose High sweater and standing by his Model T," Connie Young Yu says. "I think that was the turning point. This is an American kid. He went to Stanford and graduated in engineering, but wound up as the co-owner—how Chinese can you get?—of a soy sauce factory."

Thomas Chinn: "I remember my father saying, 'This is our home. Our descendants will be born here.' My mother had bound feet like so many Chinese girls. But after she married she removed the bindings. That was a symbolic act, a commitment to the West. The pendulum swung for us after World War II. We could get jobs and buy a house outside Chinatown. My mother finally became a citizen at 89. This is my country. If you threw me back into China now I'd be a stranger."

An end to hysteria and legal persecution

The final, culminating breakthrough came with the historic immigration act of 1965, which once and for all abolished the old quota system. Under this law, after July 1, 1968, China and every other nation was allowed 20,000 immigrants a year (families of a legal immigrant, however, don't count toward the quota). In 1982 the quota was extended to apply separately to Taiwan and the People's Republic. A tremendous influx of Chinese families, and other Asians, followed, creating what is now the fastest-growing ethnic minority in America. Yet the Chinese population, never larger than 1 percent of the U.S. total during all the years of hysteria and persecution, was projected at just over a million, or .42 percent, in 1985.

Chinese fanned out through the culture and ex-

celled in ways their oppressed forerunners could scarcely have imagined. In 1970 fifty-six percent of working Chinese held white-collar jobs, a figure well above the national average. Their education and family-income levels far exceeded national norms, and so, proportionally, does Chinese representation at demanding, high-prestige colleges.

Paul Chow and I stood outside the deserted barracks on Angel Island in a brisk winter wind. He looked past the marble monument that memorializes the immigrants detained there and focused on the choppy blue-gray bay beyond. He spoke intently. "Every group has its story," he said. "This is ours. These were our heroes. They taught us how to survive; they sacrificed and suffered so my family and I could live a better life. I'm not saying this is a perfect country, but it's better than where they came from—despite discrimination, despite Angel Island, despite everything."

Engineer Paul Chow heads a foundation to restore Angel Island, the West Coast equivalent of Ellis Island. "Every group has its story," he says. "This is ours. These were our heroes. They taught us how to survive."

the Chinese must go!
The Exclusion Act of May 6 1882 barred Chinese laborers from entering the United States. With few exceptions Chinese laborers in America could not return if they left. Those remaining could not have their family join them.
Even the alien wife of an American-born Chinese could not join her husband in the U.S. The same law also denied alien Chinese the right to become naturalized.
Angel Island
Angel Island, located in S.F. bay, was used as a detention center from 1910 to 1940. Here the immigrants were detained for days and months and even years while immigration officials attempted to ferret out illegal entries.
From now on, I am departing far from this building
All of my fellow villagers are reporting like me
Don't say that everything within is western styled
Even if it is built of jade it has turned into a cage
Detained in this wooden house for several tens of days
It is all because of the Mexican exclusion laws which intimidate me
It is a pity harried have no eyes of
expressing their pros ess
I can only swear the word at that I can
PAPER ANGELS
Directed by Jon Cadoria
May 18, 19, 20, 21 and May 25, 26, 27, 28
Chinese Reform News

By Jay Stuller

Cleanliness has only recently become a virtue

Bathing has seen its golden ages—and times when it was condemned: not so long ago Europe went a thousand years without a bath

In the leading public health textbook of 1908, W. T. Sedgwick noted that because personal hygiene is a means to control infectious diseases, "the absence of dirt is not merely an esthetic adornment." Yet with an aside that carries an odd ring these eight decades later, Sedgwick granted that cleanliness is "doubtless an acquired taste."

The average American has by now acquired that taste, at least claiming to shower or bathe more than seven times each week. That hygiene promotes health is a given. We also live in a culture where the suppression of natural body odors by colognes and perfumes is expected, if not guaranteed. To cause "personal offense," as deodorant ads exclaim, is a social felony.

Sedgwick's comment came at a time of transition,

when personal hygiene wasn't a widespread American habit. In fact, through great periods of European and much of U.S. history, cleanliness was inconvenient, religiously proscribed or just plain out of fashion. Living happily unwashed were saints, the masses and monarchs alike.

In response to the debauchery of Roman baths, the early Christian church frequently discouraged cleanliness. "To those that are well, and especially to the young," commanded Saint Benedict in the sixth century, "bathing shall seldom be permitted." Saint Francis of Assisi considered an unwashed body a stinking badge of piety. Queen Isabella of Castile boasted that she had had only two baths in her life—at birth and before her marriage. Colonial America's leaders deemed bathing impure, since it promoted nudity, which could only lead to promiscuity. Laws in Pennsylvania and Virginia either banned or limited bathing. For a time in Philadelphia, anyone who bathed more than once a month faced jail.

Saint Francis loved his fellow creatures, but we do not know how his aversion to bathing affected them.

Illustrations by Arnold Roth

The English of that era really couldn't bathe even if they wanted to, notes V. W. Greene, a professor of epidemiology at the Ben Gurion Medical School in Beersheva, Israel. "There was no running water, streams were cold and polluted, heating fuel was expensive, and soap was hard to get. There just weren't facilities for personal hygiene. Cleanliness wasn't a part of the folk culture."

Through much of the 19th century, adds Greene, Europeans and Americans lived in wretched filth, and many died young of associated diseases. "The mortality rates from the 1800s show an incredible number of deaths from infant diarrhea," he explains. "Then, around the turn of the century, infant mortality rates plunged. Something remarkable happened."

The something, insists Greene, is that Western society finally came clean. "Many other behavioral, environmental and medical changes were taking place at about the same time," he says. "But in what can only be described as a health revolution, personal hygiene is the hidden hero."

Throughout history, personal cleanliness has been greatly influenced by religion, culture and technology. It's an uneven history with no straight line of progress. Rather unambitious civilizations adopted hygienic practices, while otherwise grand and powerful societies shunned them. The Polynesians, for example, were far cleaner than the European explorers who landed on their islands.

The bath has also had many functions in which sanitation is an incidental result—a place for social gathering, mental and physical relaxation and medicinal treatment. The sweat baths of American Indians, the steamy *hammams* of Islamic nations and dips in the Ganges are more a spiritual than a physical cleansing.

Archaeological evidence suggests 5,000-year-old bathing facilities in Gaza. Soaplike material found in clay jars of Babylonian origin has been dated to about 2800 B.C. From before the time of Abraham in Middle

The ancient Egyptians worked at keeping clean, washing and anointing themselves in shallow baths. They seem almost modern in their extensive use of body ointments, skin conditioners and deodorants.

Eastern desert climes, custom dictated that hosts offer washing water to dusty-footed guests. But one of the first known and indisputable bathtubs comes from Minoan Crete. Supposedly built for the legendary King Minos around 1700 B.C. and found in the great palace at Knossos, it's of a shape similar to modern tubs. Even more impressive is the palace plumbing system that served the royal tub. Interlocking pieces of terra-cotta pipes—each tapered at one end to give water a shooting action to prevent the buildup of clogging sediment—were jointed and cemented together. Their technology put Minoans in the hydrological vanguard. Although the ancient Egyptians didn't develop such plumbing, they had a penchant for hygiene, evident in their use of fresh linen and body ointments, skin conditioners and deodorants of the day. As described in the 1500 B.C. Ebers Papyrus, these ancients washed, and treated skin diseases with a soapy material made of animal and vegetable oils and alkaline salts. From bas-reliefs and tomb excavations, there's evidence that Egyptians sat in a shallow kind of shower bath while attendants poured water over the bather.

Of course Egyptians also cleansed themselves in the Nile. There, while bathing one day, a pharaoh's daughter espied a small basket made of rushes, snagged in reeds along the water's edge. In it was a baby boy who grew up to be a rather notable leader and lawgiver. A savant of sanitation, Moses issued cleanliness criteria as well as moral precepts. As a sign of religious purification—and to be ready to hear the word of Jehovah—he ordered his Hebrew followers to wash their clothing. Before approaching a tabernacle, priests had to wash their hands and feet in a brass laver. But more than religion was involved here; Moses surely recognized the detrimental impact of filth upon the health of his wandering tribe. To him, a lack of cleanliness was "catching," in that it could pass on disease. Lepers were forced to announce their approach by shouting, "Unclean, unclean!"

The Greeks certainly were not unclean and in fact prized cleanliness. Although they apparently did not use soap, Greeks anointed their bodies with oil and ashes, scrubbed with blocks of pumice or sand, and scraped themselves clean with a curved metal instrument called a *strigil*. Immersion in water and anointment with olive oil followed.

Homer makes frequent references to private Grecian baths: shallow vessels into which heated water was poured, often for the pleasure of guests. Public baths that offered a shower, a plunge or a hot-air room known as a *laconicum* usually served as an adjunct to a gymnasium. But the Greeks rarely luxuriated in water; cleanliness was prized, indulgence wasn't. Demosthenes once complained about sailors who avoided work by "washing all the time."

At its peak of ablutive excess, it may have seemed that all of Rome indulged in the baths. In the fourth century A.D., the city sported 11 large and magnificent public bathhouses, more than 1,350 public fountains and cisterns, and many hundreds of private baths. Served by 13 aqueducts, Rome's per-capita daily water consumption averaged about 300 gallons, nearly what an American family of four uses today.

As Lawrence Wright wrote in his 1960 book *Clean and Decent*, the Roman public bath "was the focus of communal life. Bathing was a basic social duty. The

A prolific writer, San Franciscan Jay Stuller says he used to enjoy bathing—before his teenage daughters turned the bathroom into a no-man's-land.

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highest architectural and constructional skills were devoted to its setting." Yet in the early days of the republic, noted Seneca, Romans purified themselves once a week at most. Citizens then began to frequent the *balneum*, a small bathhouse not unlike a neighborhood bar. In 25 B.C., Agrippa, chief deputy to Emperor Augustus, designed and built the first *thermae*, larger and more elaborate facilities. They triggered a golden age of bathing.

Subsequent emperors commissioned increasingly grand thermae, complexes that included restaurants and areas devoted to sports, theater, music and even sleeping quarters. Either free or charging a nominal fee, the subsidized bath could boost a ruler's popularity. Emperor Caracalla's bath, notes Wright, covered an area six times larger than St. Paul's Cathedral in London and could accommodate 1,600 bathers at a time. Finished in A.D. 305, the baths of Emperor Diocletian entertained crowds of more than 3,000 in marble splendor, beneath high vaulted ceilings. Thanks to Michelangelo's restoration, part of the structure is still being used as a church.

Baths usually opened at midday, just as sportsmen finished games or exercise. A bather first entered the *tepidarium*, a moderately warm room for sweating and lingering. The wealthy man brought slaves to anoint his body with fine oils, some of which included sand to help remove dirt. Poor folk scrubbed themselves with inexpensive lentil flour.

Next came the *calidarium*, a hotter room for greater sweating, or perhaps the ultrahot laconicum. In these the bather doused himself with copious quantities of warm, tepid or cold water. Scraped off with a strigil, sponged and reanointed, the Roman concluded the process by plunging into the cool and refreshing pool of the *frigidarium*.

In the early years of thermae the sexes didn't mix. Notes Wright: "No respectable matron would go to the baths at all." In Pompeii, men and women had separate facilities. But in Rome, baths eventually became *seminaria venenata*, or hotbeds of promiscuity and vice; some were adjuncts to brothels. Rome's obsession with bathing is said to be a factor that helped send the empire down the drain.

So too went hygiene. "The fathers of the early church equated bodily cleanliness with the luxuries, materialism, paganism and what's been called 'the monstrous sensualities' of Rome," explains Professor Greene. Within a few centuries, the public and private sanitation practices of Greece and Rome were forgotten. Or, as Greene adds, were "deliberately repressed." Europe during the Middle Ages, it's often been said, went a thousand years without a bath.

Unaccustomed to cleanliness, the Crusaders brought the concept of Islamic sweat baths back to Europe.

However, Gregory the Great, the first monk to become pope, allowed Sunday baths and even commended them, so long as they didn't become a "time-wasting luxury." Given his background, it's natural that Gregory wouldn't oppose hygiene. Guardians of culture and knowledge during the Dark Ages, Europe's monasteries also preserved some of Rome's hydrological technology and cleanliness habits.

Cold baths for monks with "wordly thoughts"

Elaborate plumbing laid in 1150 served the Christchurch Monastery at Canterbury, with settling tanks to purify water, and branches that fed the kitchen, the laver and the washhouse. Monks with "worldly thoughts" were sometimes sent to chill out in cold baths. Several times each year, the monastery's chamberlain provided hot water and soap in the calefactory, or warming room. The eldest monks scrubbed first, in oval tubs made of oak or walnut. Novices bathed last. Ailing monks were allowed additional baths.

Outside the monasteries, cleanliness depended on class. Because forks were not widely used until the end of the 17th century, medieval nobility routinely washed their hands before and after meals. Etiquette guides of the age insisted that teeth, face and hands be cleaned each morning. Shallow basins and water jugs

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Cleanliness is a recent virtue

Bathing was considered so prurient in early America that Colonies issued bans or strict frequency limits.

for washing hair were found in most manor houses, as was the occasional communal tub—an entire family and guests would hop in when the water was hot. The setting also heated libidos; a common theme in medieval stories and art is romantic assignations that start with a bath.

Meanwhile, the Islamic world grew enthusiastic over the hammam, whose Arabic name means "spreader of warmth." Believing they enhanced fertility, Muhammad recommended sweat baths. Featuring intricate architecture and decor, but not as large as Roman thermae, hammams offered a series of rooms heated to different temperatures. With religious overtones that linked spiritual and physical purification, these baths also served as retreats and as places for socializing.

Crusaders who'd enjoyed the Islamic hammams brought the public bath back to Europe for the first time since the Roman occupation. Called "stews," such baths became popular in England and France. But stews ran into trouble because, like their Roman predecessors, they seemed to cause it. Centers for hanky-panky, some included galleries for voyeurs. Such immoral business—and the spread of infection and plague—generated ecclesiastical disapproval. Thus, during the reign of Henry VIII in the 1500s, most of England's stews were closed by ordinance. In 1538, Francis I ordered all French stews demolished. For more than a hundred years the public bath disappeared in Europe, until it emerged in a new guise as therapy for a wide variety of ills.

Few cared to cleanse themselves when water appeared to be downright bad for health. One 16th-century expert claimed that hot water would "stir up noxious humors." But the communal bathing that arose in the late 1600s in France, Germany, Belgium and England was ostensibly curative. A century later, Methodism's founder, John Wesley—who sermonized that "Cleanliness is, indeed, next to Godliness"—felt that cold baths could cure more than 50 afflictions, from breast tumors to blindness. Mineral waters at the great spas, where treats were served on floating trays, were said to promote health, wealth, youth and fertility. They most definitely promoted sex. At the resorts of Karlsbad, Marienbad and the like, refined ladies met with partners known as "bath shadows."

Despite therapeutic claims, bathing has had some nasty side effects. Afflicted by a severe skin disease, French revolutionary Jean-Paul Marat found relief by spending much of his days soaking in a warm, enclosed, boot-shaped bath known as a *sabot*. With only his upper torso exposed, he conducted business from the tub. There, in 1793, Charlotte Corday, a "moderate" republican, found the trapped Marat an easy assassination target. It wasn't the first or last killing in this vulnerable environment. Agamemnon's wife axed him in the tub, and what Norman Bates did to Marion Crane in *Psycho*'s shower scene sold more than a few bathroom door locks.

Bathing for cleanliness remained rare, practiced principally by the royal or wealthy, although even their dedication to it waxed and waned. Magnificent tubs were built in French palaces only to be dismantled and rebuilt during subsequent reigns. In England, commoners found such bathing virtually impossible. Considered a luxury item and taxed at 100 percent, soap fit few budgets. In crowded London, sanitation and water-delivery systems paled in comparison with Rome or Minoan Crete. Combined with a cultural disinclination toward cleanliness, the days of Dickens were horribly dirty.

"People always talk about the good old days, before pesticides and pollution," says Greene. "But in the good old days of Europe and the United States, people lived in filth, with human and animal fecal matter all

around. The rivers were filthy. Clothing was infested with vermin." Disease ran rampant. Scholars point to advances in medical science, such as vaccines and antibiotics, as the major factors in turning the tide. Credited, too, are nutritional improvements and milk pasteurization. Improved public sanitation, garbage collection, sewers and delivery of potable water played a major role. Often overlooked, however, are changes in personal and domestic hygiene, the benefits of which, claims Greene, cannot be overestimated.

"For one thing," Greene explains, "pasteurization and vaccines didn't really come along until the mortality decline was well established. That's not to say vaccines weren't important. But nearly 40 diseases are transmitted by feces, urine and other secretions on contaminated hands or other objects. The greatest cause of fatal infant diarrhea came from mothers who went to the toilet, didn't wash their hands and passed along intestinal bacteria to their babies."

In 1842, Edwin Chadwick, secretary to Great Britain's Poor Law Commission, reasoned that filth led to disease, and disease led to loss of income and thus poverty. He therefore encouraged the government to improve working-class sanitation standards. Parliament passed the Public Baths and Wash-Houses Act in 1846, and Gladstone repealed the soap tax in 1853, which cost the British treasury a million pounds a year. "By that point," says Harvard science historian Dorothy Porter, "it was clear that disease and related destitution were costing England much, much more."

In 1860, London's ten public washhouses provided more than one million baths. The bathhouse movement also spread to America. Stated the October 1892 issue of the *Journal of the American Medical Association*: "If prevention be better than cure, then, to fund a great public bath would confer a grander blessing than to erect a hospital."

The means—and the will—to come clean

Portable tubs began appearing in fashionable American households, and along with the traditional Saturday night bath, cleanings grew more frequent. By the 1870s, water heaters were introduced, although the early models were often explosively dangerous devices. Not until World War I did reliable heating devices, good plumbing, and built-in tubs and sinks put convenient bathing within reach of the ordinary citizen.

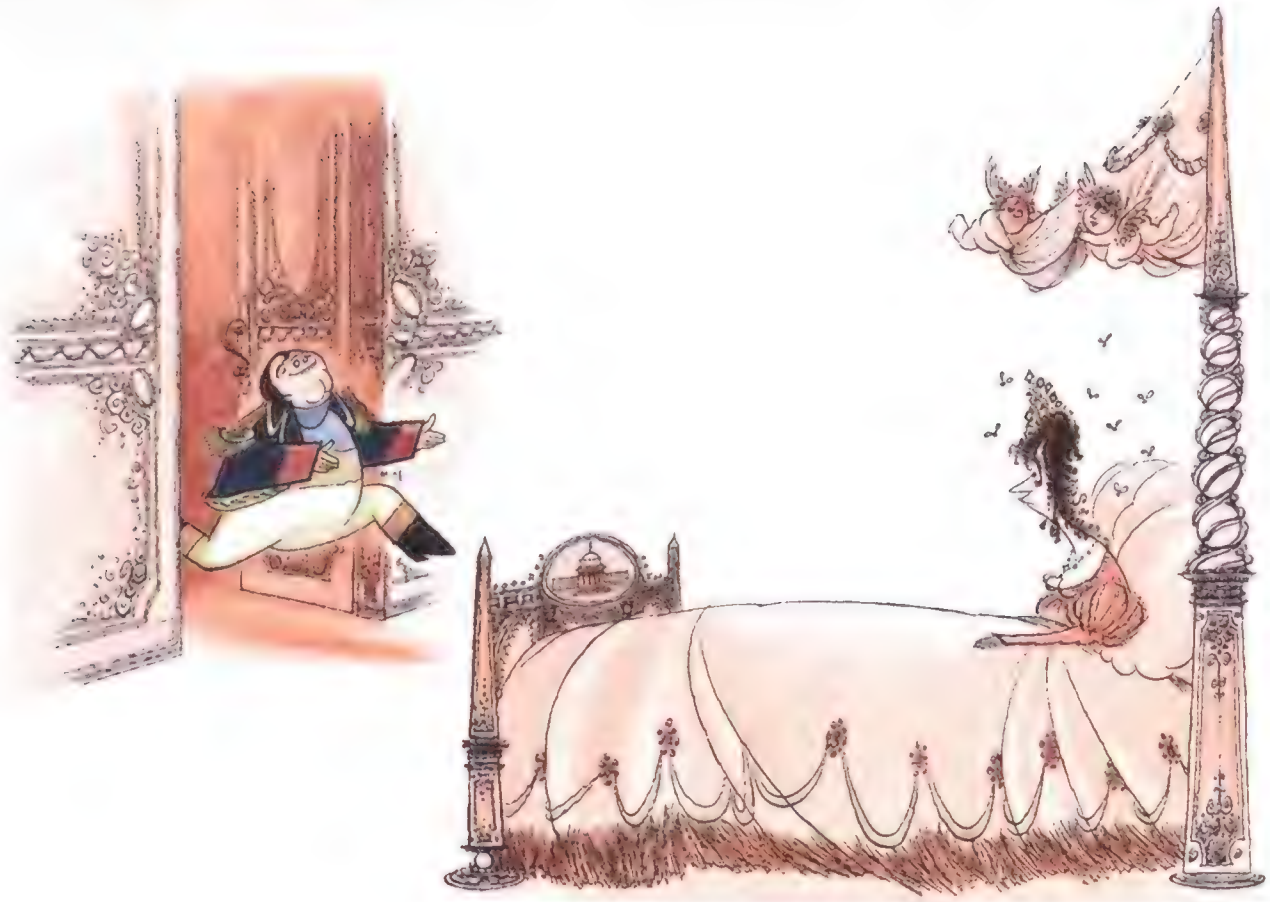
It still took some teaching to elevate Americans from the dirty. In the 1920s a New York-based organization called the Cleanliness Institute waged a "Cleanliness Crusade." Cartoon booklets were distributed to schoolchildren. The lyrics of the "Crusader's Song" suggested that "Clean hands and hearts may hope/To find the way to happiness/By using lots of soap." Another Cleanliness Institute ditty extolled the virtues of Ivory Soap, which Procter & Gamble first advertised in 1882. "I've never been able to find out whether the company funded part or all of the Cleanliness Crusade," says P&G's corporate archivist, Ed Rider. "It's obvious we were heavily involved. In the files is a copy of our pamphlet 'Songs of Cleanliness.' "

Hand washing finally took hold. Nutrition and milk pasteurization surely contributed, but it was personal hygiene that helped most—in 1915—to displace diarrhea as the leading cause of infant death in the United States. Baltimore mortality figures show that in 1870, 265 babies per 100,000 died of it; by 1920, the rate had fallen to 90 per 100,000.

What continues to baffle Greene is how the unwashed could stand being around one another. "There are cultures today where people seldom bathe," he points out. "They don't seem to be bothered, even though the rest of us can sure tell. It must be something you get used to."

Greene is correct, says Charles Wysocki, who studies the chemistry of human olfaction at the Monell Chemical Senses Center in Philadelphia. One grows accustomed to even the most noxious odor. "The first day on the job in a tannery, for example, can be overwhelming," he explains. "But after a few days, the nose adjusts to the environment. Then you have to be away

Only in this century did indoor tubs and frequent baths become the rule rather than the exception.



Napoleon's now-famous "Coming home, don't bathe" edict to his wife, Josephine, suggests the emperor fully appreciated power of pheromones.

When therapeutic baths were all the rage for curing ills and vapors, someone who dropped in just to get clean would, at the very least, have turned a few heads.

at least a week before it would be overpowering again. I suppose the same is true among filthy humans."

It's not the human body or sweat itself that really smells. The skin has more than two million sweat glands, and the perspiration that comes from the abundant eccrine sweat glands is fundamentally clear and odorless (SMITHSONIAN, May 1988). But common skin flora (several kinds of benign bacteria) feed off secretions and skin particles on the body and clothing. In the process of eating and eliminating waste, the bacteria cause the stench.

The apocrine sweat glands, mainly found in the armpit and pubic areas, themselves emit a very mild scent, particularly during anxiety and sexual arousal. "In the animal kingdom we know that accumulated chemical cues called pheromones are provocative to the opposite sex," says Wysocki. "It wouldn't surprise me if this were also true of humans. Not necessarily at a cognitive awareness level, but they may act on some subtle brain systems." So maybe Napoleon was on to something when, as he neared the end of a campaign, he sent his famous message to Josephine: "Will be home in three weeks. Don't wash."

Sweat baths, from hammams to Finnish saunas, can be cleansing. Wiping sweat off with a towel leaves little behind for bacteria to eat and turn into odor. But most of us rely on soap and water. Composed of fats, oils and an alkali, soap loosens the bonds that hold dirt, oil and bacteria to the skin and suspends them in water.

The best way to get clean—a shower versus a bath—is the subject of some debate. Showers are considered more refreshing, yet reclining in a bath does have physiological and psychological merits. Limbs become slightly buoyant in bathwater, which takes a load off muscles and triggers a drop in muscular tension. As the body in the water attempts to shed heat by expanding the blood vessels near the skin's surface, blood pressure gently drops.

But which gets you the cleanest? Not a shower, says the American Soap Company's Shyam Gupta. "When you're trying to get really clean, you want to remove dirt, oil and flakes of dead skin. You can loofah all you want in a shower, but to get rid of the flakes, the skin has to be hydrated, which takes soaking. Soapy water is also a surfactant, which reduces the surface tension of the water and helps it penetrate the skin. The flakes then float off. To get clean, you need the bath."

There is, however, a catch. The grime that's bound to the soap floats on top of bathwater. "When you stand up," says Gupta, "you're covered with a film. To get really clean, you bathe and then shower."

According to a Colgate-Palmolive survey, Americans average about 11 minutes in the shower and spend about 20 minutes in a typical bath, hardly time for an in-depth cleaning. The Japanese, who take much longer baths, are certainly far more fastidious than we. But we're all barbarians by the standards of the Romans, who sweated, soaked and were rubbed, scrubbed and strigiled clean.

A good bath, as the Romans knew, is more than a place to get clean. It's a place to relax, reflect and recharge one's will. Winston Churchill knew this and took two each day. Lolling, singing and rehearsing speeches in his Chartwell tub, he'd flop about like a hefty porpoise and emerge ready to take on Parliament, if not pull the plug on the entire Axis. His resolve bolstered by ablution, it could be said that the bath is where Sir Winston spent his finest hours.

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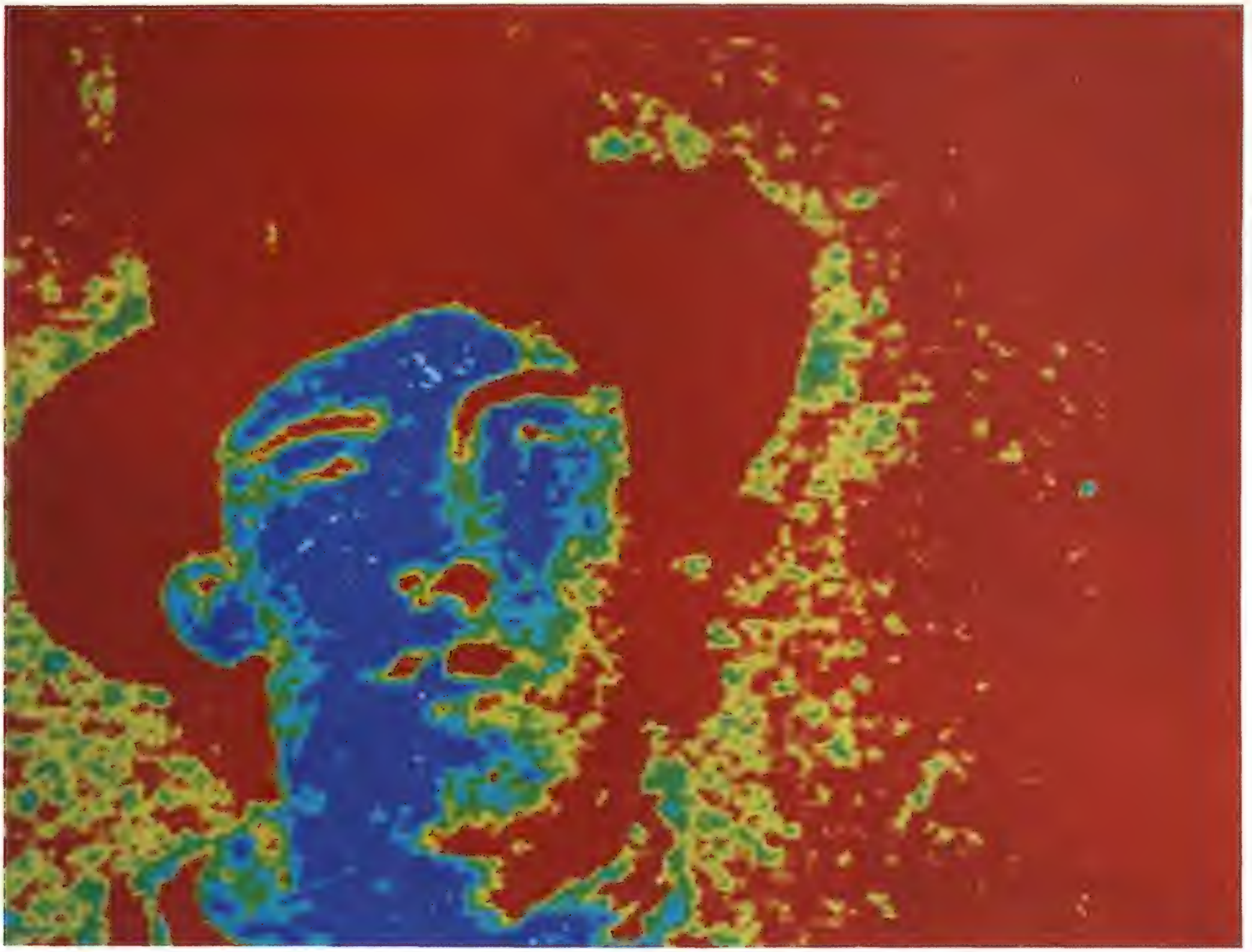

Surreal image of Billy the Kid was achieved by the computer enhancement of authentic tintype portrait.

Such high-tech methods are being used to compare his facial structure with that of assorted pretenders.

By Jake Page

Was Billy the Kid a superhero—or a superscoundrel?

Celebrated in his own time and even now, the skinny kid from New York seemed to typify America's romantic vision of the Wild West

What do Paul Newman, Aaron Copland, Gore Vidal, Kris Kristofferson and the University of Illinois Department of Biomedical Visualization have in common? Along with a host of other actors (including Robert Taylor and the memorable Lash Larue), novelists (like Zane Grey and Larry McMurtry), poets, historians, composers and folklorists, a choreographer and plain cranks, they have participated in the ongoing ballyhoo, now more than a century old, that arose even before a young man born in New York City became a corpse in New Mexico—a young man named Henry McCarty, then Henry Antrim, then William Bonney and finally Billy the Kid.

Billy the Kid, the monster who shot 40 men, or maybe it was 21 (one for each year of his short life), or maybe . . . 4? Billy the Kid, "a little, small-sized cow-and-horse-thief who lived grubbily," according to one account; and by others "courteous," "a gentleman," "generous," the Robin Hood of the American frontier, a young man surrounded by corruption and greed who had to follow his own moral code, a kind of Jeffersonian egalitarian caught up in the empire-building rape of

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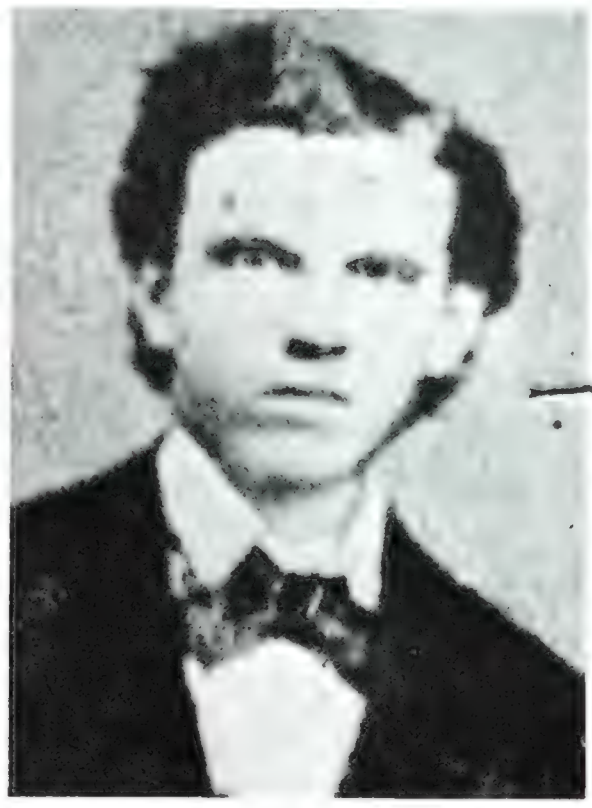
Janean Grissom of Taiban, New Mexico, leads Billy the Kid Outlaw Gang.

the West, a tragic hero, a romantic hero, an antihero, a juvenile delinquent, a brilliant marksman, a terrible shot, a practiced dancer, a lady's man, a slob, a short-tempered rube, left-handed, right-handed, shot dead by a sheriff named Pat Garrett sometime around midnight in the town of Fort Sumner on July 14, 1881, or . . . the shooting was a hoax and Billy escaped and ran off to Texas, taking the name of Ollie (Brushy Bill) Roberts or, no, he ran off to western New Mexico and died there, a reclusive old rancher, in 1937.

According to Janean Grissom, a handsome blonde woman who looks like the proprietor of the sort of ranch you can see in the movie *Giant*, these impostors are "just senile old men having a dream." Janean is president of what has recently erupted as the Billy the Kid Outlaw Gang, which issues a license plate and an infrequent bulletin to its 800 members. The gang hosts a grand fete in the summer in Lincoln County, New Mexico, where many of Billy's exploits took place (Janean and her husband own the property near Fort Sumner where Billy the Kid surrendered to Pat Garrett—of which more later). The Gang is looked upon with great favor by New Mexico's tourist department.

Why would the state of New Mexico decide that one of the best ways to get people to come and spend money within its borders is to advertise the doings of a century-old murderer, a gang member, a buck-toothed rube with a hot temper and no morals, no compunction about taking human life? The reason is that Billy the Kid sells. He resonates, even today during the active academic debunking of the Old West.

Historians today—the few that worry about such things—are bent on demythologizing the West, the Frederick Jackson Turner idea of the frontier as a formative feature of the American character. Charles Russell's cowboys are out. The men of the West were often inward, uncommunicative chauvinists like the folks in Larry McMurtry's *Lonesome Dove*. They destroyed Indian cultures, the land and everything else, including most of themselves—a bunch of drunks with the sense of boys and the weapons of



A violent James Dolan manipulated military and Indian provisions markets.

men. Their influence in the West has been blown out of all proportion, these historians say, compared with the role of women, Indians, Hispanics and blacks, and with the importance of, well, anything: economics, transportation, the Civil War, trade unionism, whatever. Billy the Kid? A nasty little nobody, yes, but with no effect on Western history or even on the outcome of the Lincoln County War, itself a degrading squabble between two greedy merchants.

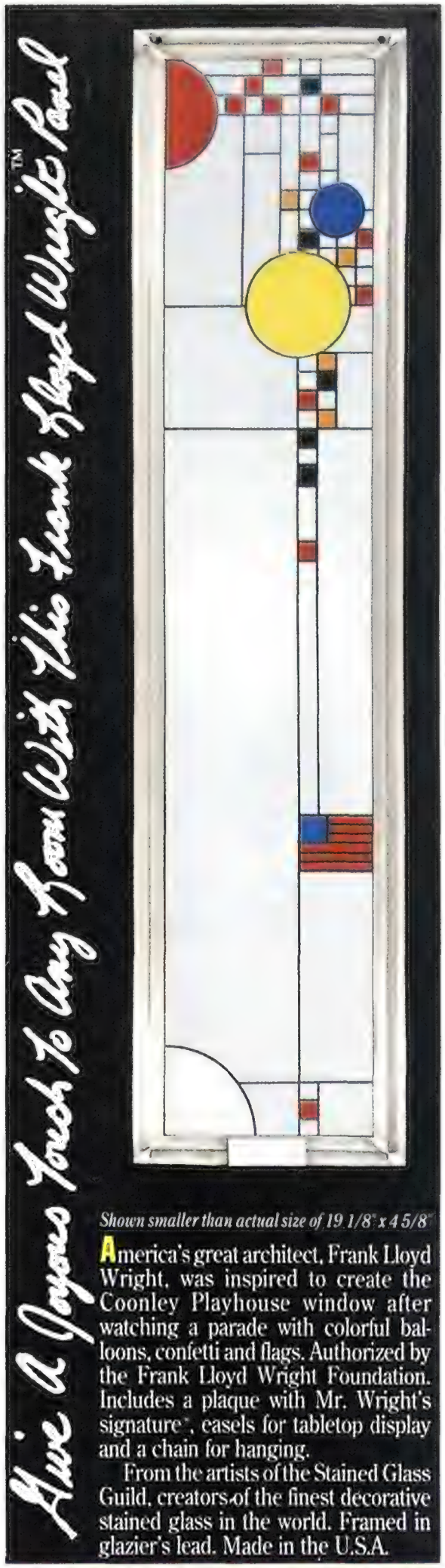
Billy, nevertheless, is apt to remain with us. An authentic if violent folk hero, or a two-bit delinquent, the problem is getting to the truth about him—the facts. This has been made difficult by the process of myth making that had already set in a few months before the Kid's death, thanks to a ravenous hunger east of the 100th meridian for gory news of the rawboned West, and thanks to the florid prose and imaginations of the Western newspaper editors, all of whom would have felt at home in the offices of the *National Enquirer*. The Las Vegas, New Mexico, *Optic* called him a "young demon" and "urged by a spirit hideous as hell."

Because tintypes register a reversed image, a cocky Billy seems to be wearing his pistol holster on his left hip in the only authenticated portrait of him.

Lincoln County War began as John Tunstall challenged Dolan's monopoly.

In Silver City, New Mexico, in 1875, Billy, age 15, had his first real brush with the law. His mother, Catherine McCarty, had died of tuberculosis. He was caught with some clothes stolen from a Chinese laundry, was jailed and escaped by climbing up and out through the chimney. After only two years, following a stint in Arizona where he learned the use of horses and guns, engaged in some relatively harmless horse thievery, and shot and killed a man who had bullied him relentlessly, he emerged in southeastern New Mexico with the name William Bonney. Not till later did he become known as Billy the Kid.

Then as now, celebrity distorts, and



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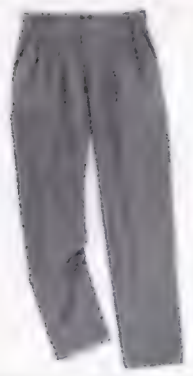

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Fanciful painting has Billy skipping and shooting as Regulators flee the McSween house, set afire by sheriff's posse in Lincoln County War.

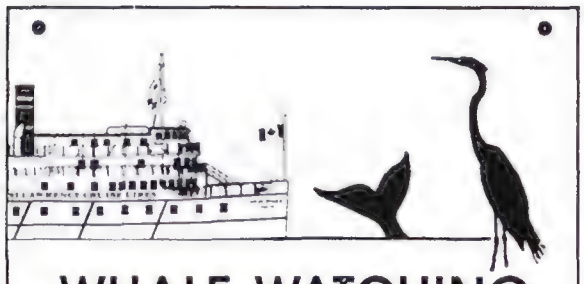
historians have had a run for their money trying to find the real Billy amid all the accretions that have built up like a series of coral reefs.

Why did this foreshortened life, one played out quite sordidly, capture the American imagination to the point of producing the premier outlaw figure in the vast panoply of outlaws who spattered the frontier with lead and derring-do?

Apparently, if you want to be a hero of mythic proportion, it helps to have origins that are a bit mysterious. The records show two Henry McCartys born in New York City in 1859, a few months apart. No one knows or probably will ever know which one became Billy the Kid. There is no record of a father. There is only one known real photograph of William Bonney (p. 139), a tintype by an itinerant photographer in Fort Sumner in 1879. According to the Kid's most distinguished biographer, Robert Utley, former chief historian for the National Park Service, there were four tintypes of Billy. (Some tintype cameras had four lenses and so made four images simultaneously.) Because tintype images are reversed, a lot of people were led to believe that Billy had been a southpaw (there was even a movie made about the Kid called *The Left-Handed Gun*). Three of the tintypes are missing, and the picture of Billy seen in books is a reproduction of a reproduction of the remaining one, showing what appears to have been a slope-shouldered, dopey-looking youth wearing a stupid hat and a silly grin—a hillbilly. It pays to look at the original image, located in the Lincoln County Heritage Trust Museum in the largely restored town of Lincoln, which shows a more chiseled face of challenging intelligence.

In 1936, a former shepherd named José García y Trujillo was interviewed about the Kid by a researcher for the New Mexico Federal Works Project and spoke of his extraordinary quickness of mind. Speaking of the Kid, García y Trujillo "pointed to his forehead and then with a quick motion to the sky. '*Un función eléctrica*,' he said. Something that worked like lightning." The Kid was too smart to have been

Living in New Mexico, the author is surrounded by Billy the Kid euphoria.



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trapped by Pat Garrett, the old man ventured. " 'You think Billy the Keed let himself be shot in the dark like that? No, *señora*—Billy the Keed?—never. I see Billy the Keed with these eyes. Many times, with these eyes.' "

Many of the Kid's Hispanic friends in New Mexico died convinced that Billy escaped death at the hands of Garrett. Such frail beliefs are fed by the fact that, while there is a coroner's report, there is no death certificate. The Kid is still not legally dead, and in spite of a marker in Fort Sumner, no one is certain where he is buried. In 1950 a man called "Brushy Bill" Roberts from Hico, Texas, aided by a lawyer, claimed to be Billy and was so convincing that arrangements were made to have New Mexico's governor award Brushy Bill the pardon the Kid had always wanted. But Brushy Bill was illiterate, and Billy the Kid, when he was Henry McCarty, had fed his fantasies by reading the *Police Gazette*. And it was unlikely that Brushy Bill could speak or understand Spanish, in which Billy was fluent. At a time when the Hispanics and the Anglos in New Mexico got along uneas-

Billy racks up yet another killing, blasting bully Joe Grant in a barroom.

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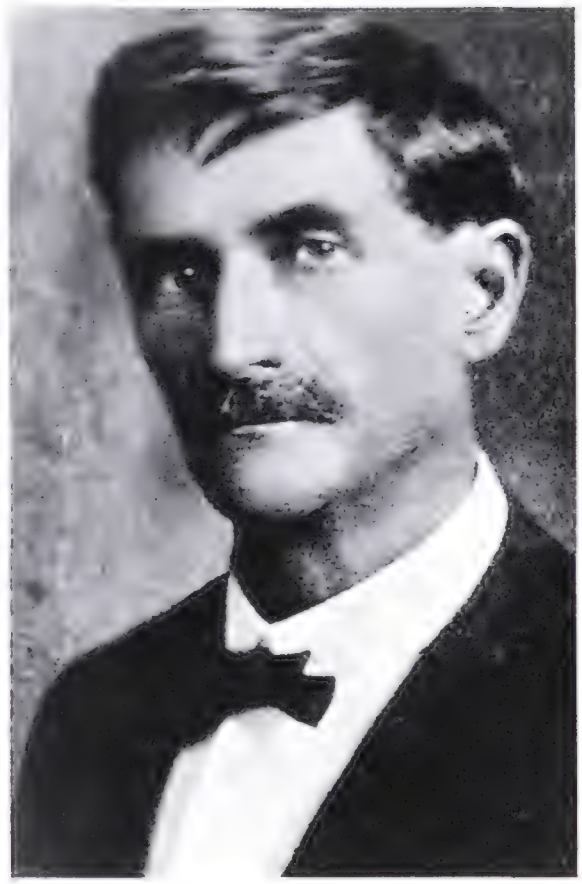

Pat Garrett was a steely-eyed sheriff who proved to be Billy's nemesis in 1881.

ily at best, the Hispanics loved Billy—in particular the women. Said a Texas belle: "He was the best-natured kid and had the most pleasant smile I most ever saw in a young man."

In any event, we have at least three basic Billy the Kids: the one who was shot and killed at age 21; the one who escaped and lived a long life as a recluse or a braggart, far from Lincoln; and the totally malleable Billy who lived on in the mind of America, unkillable like Elvis, and who has since been sinner and saint.

We know a lot about Billy, thanks to historian Utley and his recent book *Billy the Kid: A Short and Violent Life.* The first professional historian to have taken a serious whack at the Kid, Utley told me that this distinction put him in a difficult position: right between the pros who scoff at wasting time on such trivia, and the amateurs for whom the Kid is paramount, nearly sacrosanct, and who "will not want to hear the historical truth. They'll keep him left-handed, if that's the way they've seen him up to now."

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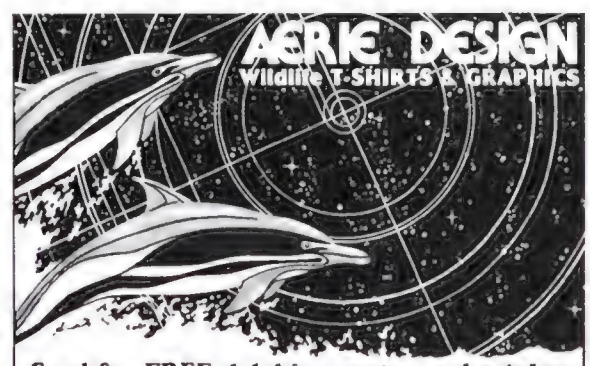

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All right, then: the *true* Kid, according to Utley.

He reemerged in New Mexico at age 17, in 1877, at a time when an ugly situation was building up in that territory's southeastern quadrant, which comprised Lincoln County. A group led by James Dolan in Lincoln held a monopoly on buying cattle and produce from nearby ranchers to sell to the government as rations for Indians and the Army installation at Fort Stanton. The monopoly was being challenged by a newly arrived young Englishman, John Tunstall, who wanted to get rich quick just like everybody else at the time.

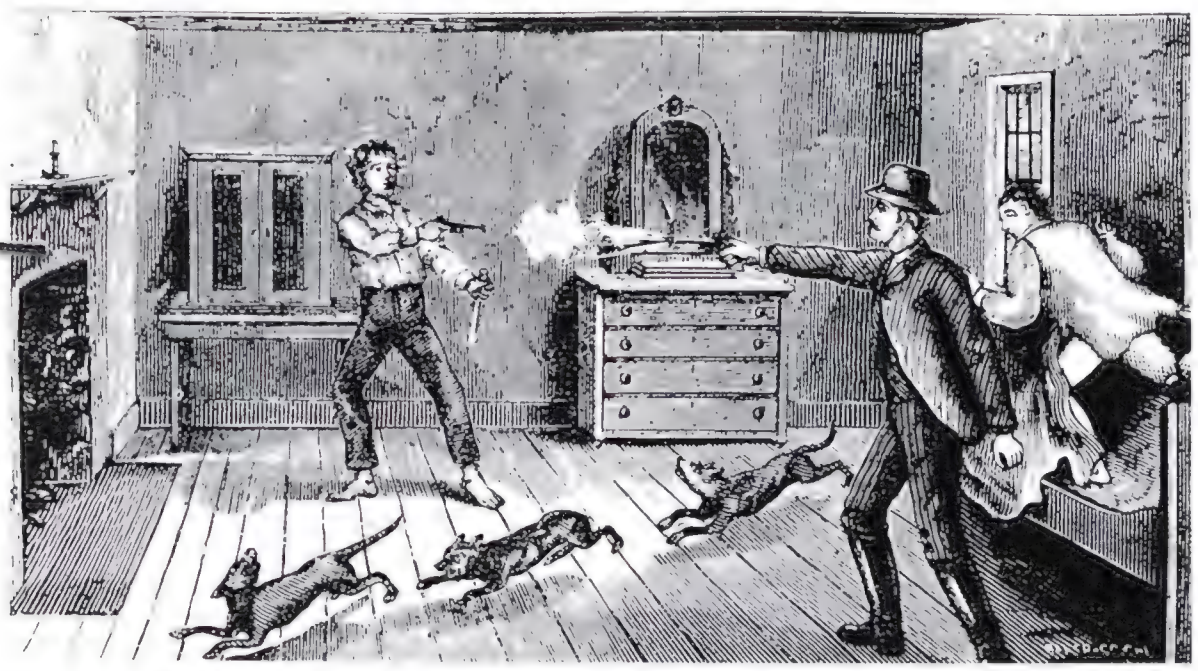
This was a period, according to Utley, when a frontier ethic ruled in those parts: you didn't allow an insult to go unchallenged; you didn't put much value on a human life; you probably had more than one gun with you at all times; and you were probably tipsy, if not downright drunk, all day long.

The young William Bonney evidently did not drink, but like many other impressionable youths whose older peer group subscribed to a pretty exciting ethic, he had surely bought the rest of the concept. In Lincoln he found himself allied with the Tunstall forces, a loose, posselike group called the Regulators, and almost immediately became embroiled in a lethal and sloppy "war." Each side consisted of true believers who claimed the law was on their side. The Regulators ambushed the Lincoln County sheriff and shot several other men.

Meanwhile, they had been surrounded in the house of Tunstall's lawyer. The siege lasted several days before the clever and resourceful Bonney, who proved to be something of an escape artist, worked out and implemented an escape plan.

By the time the Lincoln County War ran out of gas in 1880, with the principals of both sides either dead or bankrupt, the adolescent Bonney had participated in the group-shooting of five men and had singlehandedly killed one, the bully in Arizona. There were warrants out all over Lincoln County for his arrest as a murderer, along with the other Regulators. Except for Billy, virtually everyone involved got pardoned or let off one way or another.

After the Lincoln County War, Billy drifted around the territory as a fugitive. He hooked up with one or another bunch of cronies to rustle some Texas cattle over to New Mexico, made money beating people at cards in saloons (he was very good at the game of monte) and went to dances, which he loved. He was also



Woodcut shows a dandified Pat Garrett dispatching barefoot Billy while Pete Maxwell (right), owner of house, dives for cover.

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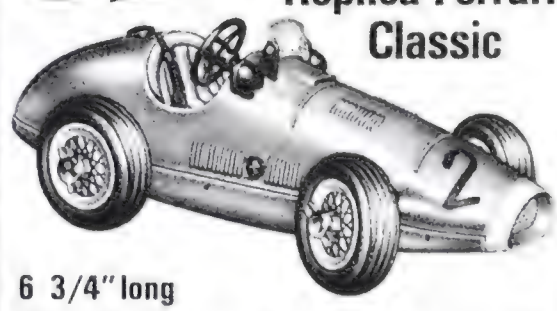

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Billy look-alike contest's 1990 winners were William Cox (left), William Long.

fond of singing, his favorite tune being "Turkey in the Straw." During this period he shot another bully in a barroom, a Texan named Joe Grant, who was drunk and making generalized challenges to the world. Complimenting Grant on his ivory-handled revolver, Billy took the gun from Grant's holster, looked at it admiringly, spun the cylinder deftly and handed it back. As Grant got more menacing, Billy challenged him and then turned his back. When Grant fired, his gun's pin fell on an empty chamber in the cylinder—where Billy had set it. Billy spun around and blew Grant away.

Self-defense? Entrapment? Anyway, it was the "second killing with which the Kid can be solely and incontestably credited," according to Utley.

By then, locals were getting upset at all the violence. Pat Garrett, a former buffalo hunter, was elected sheriff of Lincoln County with the express task of cleaning up the likes of Billy the Kid. In due course, Billy and a small group of rustler friends were trapped by Garrett and a large posse in a stone

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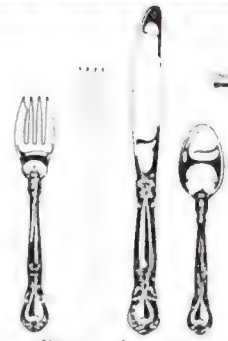

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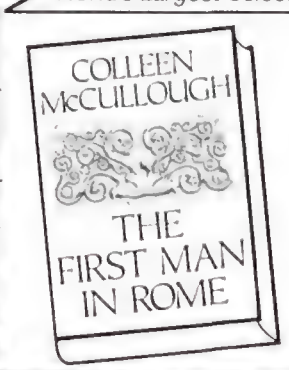

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house at Stinking Springs (now a ruin on Janean Grissom's spread). After a long shoot-out one of Billy's friends was killed, as was a horse that died in the doorway, blocking Billy from making a dramatic escape on his own horse. The desperadoes surrendered and Billy was stashed in jail.

"The laugh's on me this time," Billy told a reporter, who later described him: "...there was nothing very mannish about him in appearance.... He is about five feet eight or nine inches tall, slightly built and lithe, weighing about 140; a frank open countenance, looking like a school boy, with the traditional silky fuzz on his upper lip; clear blue eyes, with a roguish snap about them; light hair and complexion. He is, in all, quite a handsome looking fellow, the only imperfection being two prominent front teeth slightly protruding like a squirrel's teeth, and he has agreeable and winning ways."

Perhaps the most famous (true) event in the Kid's life (aside from his death) was his escape from the courthouse jail in the town of Lincoln. In handcuffs and leg-irons, he nonetheless managed to get hold of a guard's gun and shoot him dead, then shoot another guard dead with a shotgun. Freeing himself of his shackles, he escaped on horseback before an awed crowd on Lincoln's single street.

Instead of lighting out for Mexico or some other remote and safe place,

Brushy Bill Roberts' image (left) failed computer test, compared with Billy's.

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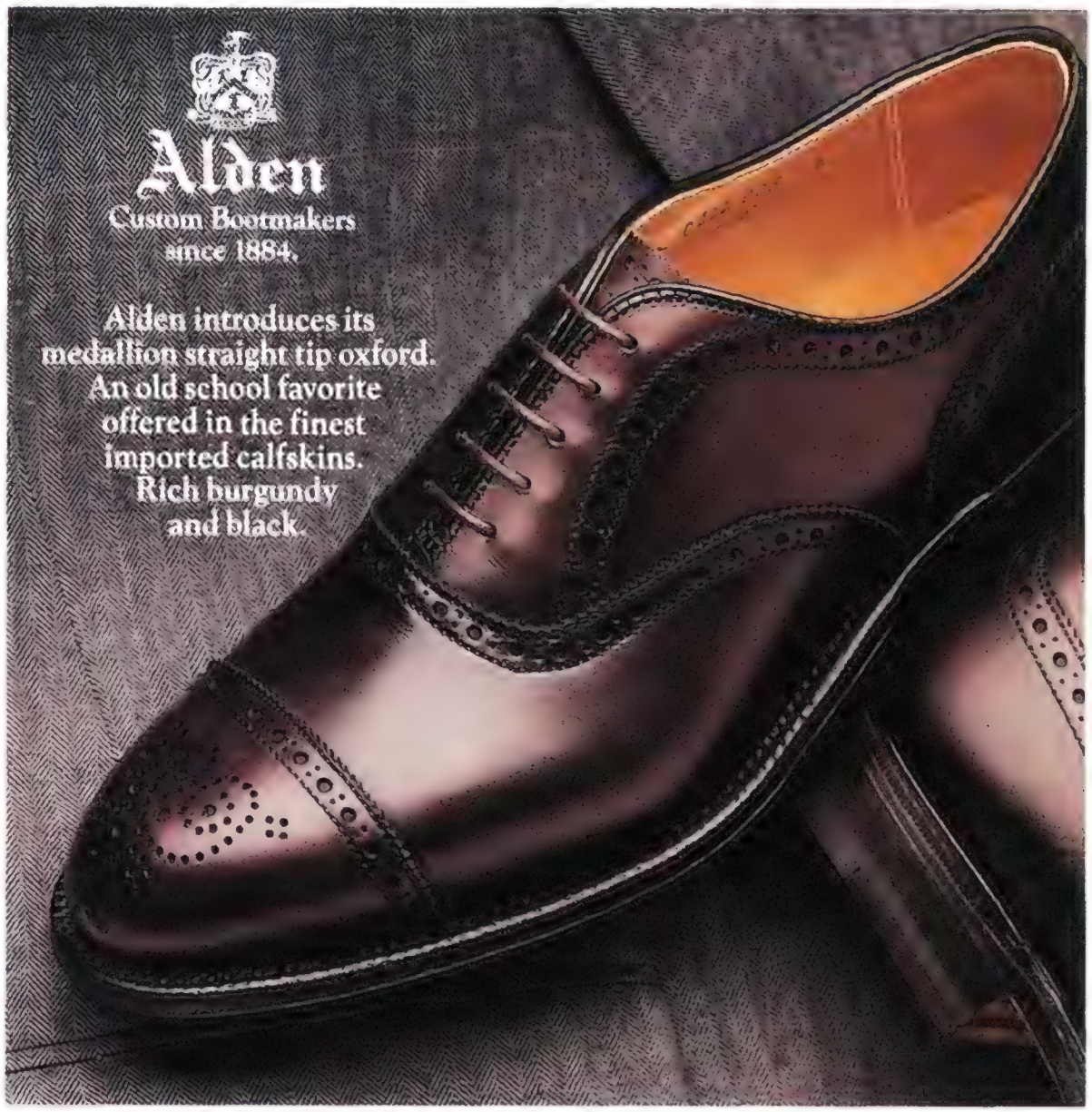
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Paul Newman (right) in 1958's *The Left-Handed Gun* played Kid as sociopath.

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Billy returned to the salubrious haunts of Fort Sumner, where he had friends. In a house there, on July 14, 1881—perhaps after a nocturnal tryst with a young Hispanic woman—he wandered out of his room into that of the house's owner, Pete Maxwell. Noting another presence in the gloom, Billy asked in Spanish, "*Quien es?*" ("Who is it?") Pat Garrett's reply was a bullet that conclusively dispatched Billy.

And that was that.

The Kid's death was noted as far away as England. The New York *Daily Graphic* said he "had built up a criminal organization worthy of the underworld of any of the European capitals. He defied the law to stop him and he stole, robbed, raped and pillaged . . . he became, in the short span of his twenty-one years, the master criminal of the American southwest."

This understated obituary proved predictive. About 12 dime novels published between 1881 and 1906 all portrayed Billy the Kid as Satan's lieutenant on Earth, an utterly ruth-

less, bloodthirsty killer whose death at the hands of Pat Garrett symbolized the welcome end of savagery and lawlessness in the West. With a ghostwriter, Garrett produced his own version of history, *The Authentic Life of Billy the Kid, Noted Desperado of the Southwest, Whose Deeds of Daring and Blood have Made His Name a Terror in New Mexico, Arizona & Northern Mexico*, in which he attempted to show a few good features in the Kid's makeup, but pointed out forcefully that, with the Kid no longer around, Lincoln County was now a peaceful place.

After a two-decade lapse of interest, as cultural historian Stephen Tatum has pointed out, after 1925 the public rediscovered Billy "as a quixotic, romantic idealist who symbolized a lost pastoral world." He became at best a Robin Hood figure, at worst a misguided youth caught up in a difficult world. His first killing, it was said (in the initial Book-of-the-Month Club selection, *The Saga of Billy the Kid*), was to avenge an insult to his mother; the others, to avenge the death of his employer Tunstall. This was the view that informed Johnny Mack Brown's 1930 movie *Billy the Kid*: the good outlaw, increasingly isolated, serving the cause of justice, if not the law. By 1938, though, the boy had become a relentless, amoral killer in the popular ballet *Billy the Kid*, by Eugene Loring and Aaron Copland.

In the 1940s, a string of B movies with the likes of Buster Crabbe presented Billy as a populist hero protecting the countryside in the manner of the Lone Ranger. In the 1950s, Paul Newman played the Kid twice—in a Gore Vidal television drama and in a movie—both times as a James Dean-like rebel without a cause.

From that point on, Billy pops up all over the place. He was a romantic hero who warded off Count Dracula, of all things, in 1966. He was a doomed avenger in John Wayne's macho *Chisum*; a symbol of the loss of individual freedom in Sam Peckinpah's dreary *Pat Garrett and Billy the Kid*. After these films of the 1970s he dropped from national view, to reemerge in the late '80s.

Larry McMurtry followed his highly successful novel *Lonesome Dove* with the eerie, aberrant tale *Anything for Billy*, in which a Billy the Kid figure (called Billy Bone) goes through a long series of adventures that have no relation whatsoever to any historical aspects of Billy the Kid. McMurtry's Billy emerges as a rather petulant and needy youth, a terrible marksman, impetuous and often lethal, but vague. In the company of a beautiful female scientist named Cecily Snow, he reminds the narrator "of one of the nearly transparent fish Cecily had shown me. . . . An outline was visible, but the fish—as you ordinarily think

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of it, with guts and fins and scales—didn't seem to be there."

Then two movies, *Young Guns* and a sequel, evidently made for a youthful audience, actually portrayed Billy as a kid—an attractive-looking but troubled and short-tempered adolescent. Their message, after much violence, is, in essence: say no to violence. In all, there have been more than 40 movies about the Kid.

Meanwhile, an Albuquerque publisher, Helen Airy, turned up evidence of what she is convinced is an escaped and retired Billy the Kid: a man named John Miller, who lived on a ranch near Ramah, New Mexico, until his death in 1937. A mysterious man with a hidden stash of money, and a penchant for guns, he evidently told several people he was the Kid. They included an adopted son and a Canadian lawman to whom he gave a pistol. The gun wound up in the hands of another Canadian, who discovered that it is an 1880 Army revolver and could have been the Kid's.

Helen Airy supplied the Lincoln County Heritage Trust with two photographs of John Miller. They have been sent to the University of Illinois in Chicago, where a computer-enhanced study of 25 facial characteristics in the "Billy tintype" has already been checked against photographs of Brushy Bill and 150 convicted Chicago felons of both sexes. Forensic anthropologist Clyde Snow has declared that 40 convicts bear more resemblance to Billy than does Brushy. Now John Miller's and a dozen other photographs are to be examined.

"There isn't a shred of evidence, not a single credible piece of paper, that suggests that Billy the Kid didn't die on July 14, 1881, or that these other guys were the Kid," says Robert Utley. No expert takes those claims seriously, but people cherish the legend, and a few just need Billy to have lived on.

"On the other hand," Utley continues, "behind the legend is a truly interesting human being." There were, it seems, two Billy the Kids: an outer one of sunshine and merriment, banter and laughter, and an inner, calculating Billy, steely and dangerous. "When he was rough," said somebody who knew him, "he was as rough as men ever get to be. . . ."

"The main thing to remember about Billy the Kid," according to Utley, "is that he was just that—a kid among men. Most 21-year-olds are rebellious, and Billy was consistently rebellious. And when others realized it was time to stop using violence as a form of persuasion, Billy simply wouldn't conform. That was his undoing."

And, of course, that is why he continues to ride across the landscape of the American consciousness—elusive, irrepressible, lethal, an insouciant reminder that in matters of conformity and rebellion, violence and civility, justice and corruption, we Americans can't make up our minds.

Another man who claimed to be Billy was John Miller, right. At center, his portrait is superimposed over Billy's. The Kid—or an impostor?

Book reviews

Magnetic North:
A Trek Across Canada
David Halsey with Diana Landau
Sierra Club Books, $19.95

Canada stretches like an enormous roof above the United States, so wide that a highway across the country was completed only in 1970. It is the second-biggest nation in the world—the biggest of all if the Soviet Union splits up—and much of it is still wilderness. Coast to coast by road, it spans 4,854 miles. In 1977, David Halsey, a 20-year-old from McLean, Virginia, set out to cross 4,700 of them on foot and snowshoe, by canoe and dogsled.

Halsey's team called itself the Trans-Canada Expedition, which sounds pretty grandiose for what seems at first a Mickey Mouse sort of endeavor. Compared with the ordeals of Canada's 18th-century fur trader-explorers, men like Alexander Mackenzie and Samuel Hearne, Halsey's enterprise promised to be a Sunday stroll.

The early trek was along roads and railway lines—hardly the stuff of grand adventure; later stretches were on well-[illegible]pped routes and rivers frequented by vacationers. There were stop-offs at launderettes and pizza restaurants. And when things went wrong, Halsey would get to a telephone and call his parents. But things went wrong fairly quickly: four days after the group left Vancouver, his three teammates quit, and Halsey found himself a one-man expedition, camped in a town park.

The journey, however, turned into a gripping wilderness adventure that holds the reader for thousands of miles. Halsey is a tough traveler, a highly tal-

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ented writer and a thoughtful analyst of the processes of hardship, and *Magnetic North* is an exceptional book.

But it is a book with a gaping flaw—Halsey never finished writing it. He completed the trip, which took 27 months and stretched from the Pacific coast to Tadoussac on the St. Lawrence River, but two-thirds of the way through the manuscript he committed suicide. *Magnetic North* was pieced together and finished by an editor.

Not that there is anything morbid about the book, which sings with the power of the outdoors. When Halsey emerges from the mountains of British Columbia, he is joined for the rest of the trip by Peter Souchuk, a young Chicago public relations photographer, and the Trans-Canada Expedition hits its first real excitement—the vicious rapids of the Athabasca River.

The encounter is almost fatal. Their canoe spills repeatedly, and both men nearly freeze to death. Halsey's account of their exhaustion and the fury of the river is as chilling as the water. The pair are rescued by a passing research team; more than a year later they are pulled from another river by Ojibway Indians.

Between the two rescues the trekkers learn the lessons of survival in the North (in temperatures that hit 58 below) from homesteaders, prospectors, hunters and Indian trappers they meet along the trail. Simply learning from an Alberta elder how to trap rabbits with snares made from brass wire feeds them for 3,500 miles. Another woodsman helps the two tenderfeet across the continent by explaining that they have been wearing their snowshoes wrong for 200 miles.

As time passes, Halsey becomes almost a philosopher of survival: "When one has no means of obtaining heat or nourishment, the mind eventually forgets their pleasures. . . . the conscious mind forgets that heat ever existed. . . ." "Traveling long distances by dogsled requires a certain mindlessness that takes months to learn. One must remain alert for any of a hundred mishaps that can cripple humans or dogs, yet the monotony can only be endured by shutting off thoughts and escaping into dreams."

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Peter Souchuk, who joined Canadian expedition in September 1977, relaxes in spring of 1978 at Lake Winnipeg, Manitoba, with a dog team and sled.

river, past parking lots and picnicking families, is an anticlimax. At their last campsite, about ten miles from Tadoussac, Halsey's father and a reporter visited the team: "Maurey Halsey thought Dave seemed slightly depressed."

Certainly it was a letdown for him. Diagnosed as manic-depressive, longing to return to the Canadian bush, unable to cope with life at home in Virginia, David Halsey swallowed an overdose of antidepressants and died.

"There's nothing worse than a dreamer who never tries," the young man had written, but for him there would be no more dreams.

David Lancashire
Globe and Mail, Toronto

The Burning Season
Andrew Revkin
Houghton Mifflin, $19.95

The World is Burning
Alex Shoumatoff
Little, Brown, $19.95

For decades, Brazilian politicians and patriots have concerned themselves with visions of taming the Amazon River basin, an area almost as large as the United States, home to approximately 15 million species of plants and animals, tangled under the largest stretch of dense, daunting tropical forest left on Earth.

The Brazilians envisioned bulldozing and burning enormous tracts of the forest, clearing them for cattle ranches and some farms, laying highways across the basin, and fashioning great cities. Most Brazilians knew that some Indians inhabited the forest but were not prepared to find tens of thousands of rubber tappers, relics of the past, still living there as well (SMITHSONIAN, November 1989). As they forged ahead with their schemes, violent conflict became inevitable, a violence at least as

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terrible as that spawned by the conquest of the American West. Out of that violence came the murder of Chico Mendes, the rumpled, 44-year-old leader of a local tappers' union who had become the unlikely hero of environmental groups throughout the world. The international outcry over his death astounded and unnerved Brazil.

In very different ways, Andrew Revkin, a teacher of environmental reporting at the Columbia University Graduate School of Journalism, and Alex Shoumatoff, a *New Yorker* staff writer, tell the story of Mendes and the struggle over the Amazon basin, a struggle that began with all advantage to the visionaries and developers. Revkin delivers a straightforward and measured account while Shoumatoff offers a meandering, personal narrative. A reader will sense the sounds and smells of Brazil far better in Shoumatoff's book but probably will feel confused unless well acquainted with the story already.

Mendes, a tapper with little formal education, was head of a small union in the rubber-trading post of Xapuri in Acre, the most western and remote province of Brazil. His tappers came out of a moribund industry. Vulcanization of rubber and the birth of the automobile industry had turned the 100-foot-tall rubber trees of the Amazon into an extraordinarily rich resource at the turn of the century, attracting tens of thousands of workers from all over Brazil. Brazil was the largest exporter of rubber in the world. But more efficient Asian producers of rubber soon entered the market, and by 1913, Asian rubber production had surpassed Brazilian production. Brazil had a short revival during World War II when the United States found its Asian suppliers under Japanese control. The Brazilian government called for *soldados do borracha*—soldiers of rubber—to come to the Amazon forest to tap the trees for the Allied war effort. But synthetic rubber and Asian rubber took over the market again after the war.

Without government tariffs to keep out the competition, the tappers could not sell their rubber even within Brazil today. None at all is exported elsewhere. The weakness of the rubber industry and the support of the Roman Catholic Church made it easier for leaders like Mendes to organize the tappers, who had been exploited for decades—kept in debt by rubber plantation owners who paid them a pittance.

Lined up against them were the forces of Manifest Destiny, of modernism, of inexorable development. The ranchers, as Revkin puts it, were the "pioneers who were leading the country toward its new status as a major exporter of food." To them, the tappers were merely "an inconvenience that had to be removed from the land along with the weeds and trees." To do so, the ranchers either bought out the tappers or cheated them or frightened them or killed them. Many hired hands were simply *pistoleiros* with instructions to intimidate and murder tappers and their leaders.

Although Mendes and his tappers organized confrontations that sometimes forced ranchers to back off, his movement might have remained obscure and feeble if he had not been discovered by environmentalists. Fretting over the depletion of the tropical forest and persuaded that the burning of the Amazon—

7,603 fires were spotted by satellite on a single "worst" day in 1987—was contributing to a dangerous warming of the planet, environmentalists embraced a dynamic local leader who opposed destruction of the forest to save the livelihood of his people.

Inspired by the environmentalists, Mendes proposed the creation of "extractive reserves" in the Amazon—protected tracts of forest left for those, such as rubber tappers and gatherers of Brazil nuts, who could extract the Amazon's resources without destroying the forest. Mendes thus was protecting his tappers and helping to prevent "the greenhouse effect" with the same stroke. In 1987, Mendes traveled out of Brazil for the first time in his life, making speeches, conferring with U.S. legislators and accepting awards. He became an international environmental hero, and that infuriated the developers and ranchers even more. "You think it's right that we pay the onus of not being able to develop, so Americans can breathe our oxygen?" a rancher's wife asked Shoumatoff.

Mendes was shot down three days before Christmas in 1988 as he walked out of his house into the backyard to take a shower. So many tappers, peasants and their leaders had been murdered in recent years that most Brazilians could shrug at this assassination. Shoumatoff says there had been only two convictions in more than a thousand cases of murder in conflicts over land in the Amazon since 1980. But the murder of Mendes provoked an international outcry, and Brazilian officialdom was forced to investigate. Police arrested Darly Alves da Silva, an unsavory rancher who had long battled with Mendes, Darly's son Darci, and a hired hand, and charged them with the murder. Both Revkin and Shoumatoff, however, hint that they believe the Rural Democratic Union (UDR), an organization of rich ranchers, founded in 1985, probably had issued the order to kill Mendes. The UDR, presented as "little more than a club," quickly bought 1,636 firearms "to be distributed to members," Revkin says.

As the murder trial began in December 1990, Darci, who had confessed when he was arrested and then recanted, once again claimed full responsibility for the murder. Prosecutors said his description of the crime did not agree with the evidence. "It is evident that the crime did not happen in the manner he says. The object is clearly to save Darly," said prosecutor Marcio Tomas Bastos. Defense attorneys pointed out that the judge would have to be lenient in sentencing because Darci was under 21 in 1988.

A case can be made that Mendes did not die in vain. The new Brazilian government of President Fernando Collor de Mello, more sensitive to the problems of the environment, has now slowed down development and set aside some extractive reserves for the tappers. Both the environmental and tappers' movements seem more vibrant in Brazil these days. Even more significant, the numbers of killings have diminished. But, as the furor over the death of Mendes subsides, both the ranchers and the movement to tame the Amazon are still powerful, and many observers are pessimistic that the real murderers of Chico Mendes will be convicted.

Stanley Meisler
Washington correspondent
for the *Los Angeles Times*

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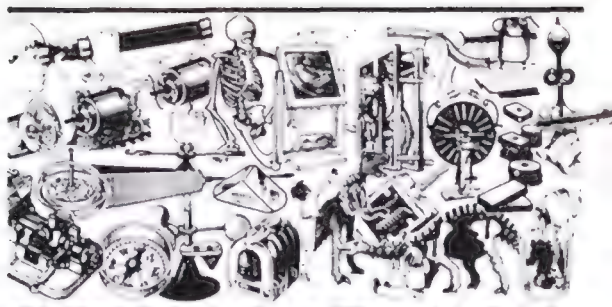

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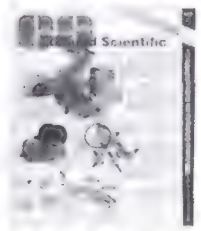

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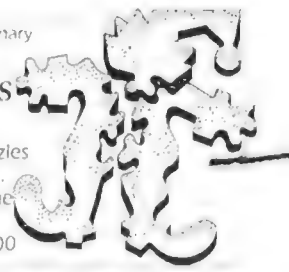

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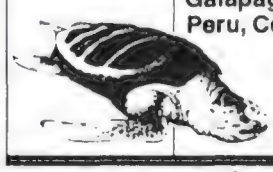

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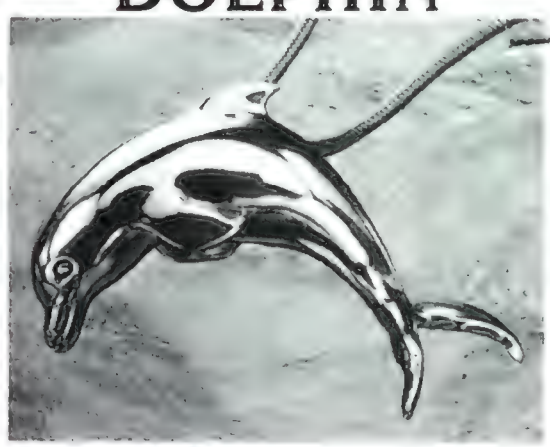

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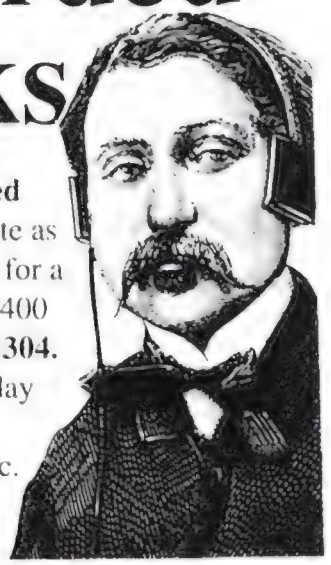

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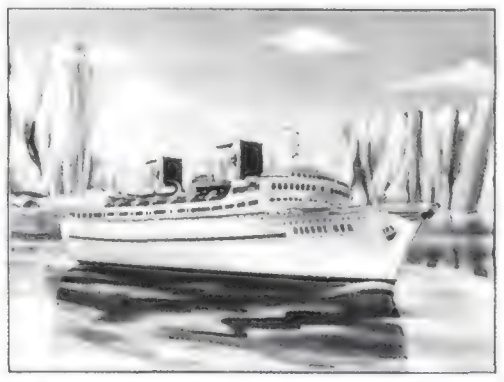

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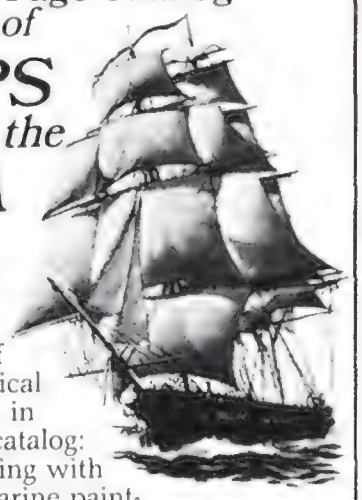

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National Museum of American Art
Harlem: Photographs by Aaron Siskind, 1932-1940 (through May 27) Sixty eloquent images. See *Highlights continued*, page 160.
Winslow Homer in the 1890s: Prout's Neck Observed (February 8-May 27) The great marine paintings of the 1890s.

National Portrait Gallery
Lincoln and His Contemporaries: Photographs by Mathew Brady from the Frederick Hill Meserve Collection (February 1-February 17, 1992) Images of mid-19th-century Americans.
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Hirshhorn Museum & Sculpture Garden
Sigmar Polke (February 13-May 5) Retrospective honoring the influential and eccentric German artist, organized by the San Francisco Museum of Modern Art.
Directions—Mike Kelley: Half a Man (February 20-May 19) Stuffed animals, afghans, are among the objects transformed by the Los Angeles-based artist.

National Museum of Natural History
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National Museum of American History
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the first, through February 3; the second, through April 14) Site-specific works by seven glass artists.

Cooper-Hewitt Museum (New York)
Mondo Materialis (through February 24) Collages made of high-tech materials.

Arthur M. Sackler Gallery
Paper and Clay from Modern Japan (through March 17) Thirty pieces by prominent artists.
The Arts of China (runs indefinitely) More than 200 objects, including sculptures and paintings, span 6,000 years.

National Museum of African Art
Paramount Chiefs of Sierra Leone: Photographic Portraits by Vera Viditz-Ward (through September 2) Contemporary photographs from West Africa.

National Air and Space Museum
Blue Planet (runs indefinitely) New Smithsonian Imax film features dramatic footage of Earth and its environment, as seen from space.
"Trust But Verify"/"Do Veri, No Pro Veri" New permanent exhibition features a U.S. Pershing II missile and a Soviet SS-20 missile.

Exhibition catalogs

Catalogs available currently include:
Harlem: Photographs by Aaron Siskind, 1932-1940 (paper, $14.95)
Winslow Homer in the 1890s: Prout's Neck Observed (paper, $27.50; cloth, $35)
To order, send check or money order to Museum Shops, 3301 75th Avenue, Landover, Maryland 20785. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Smithsonian on the air

Radio Smithsonian will begin broadcasting a new series and specials that explore the arts and sciences, and human culture. These programs will be aired on public radio stations nationwide. Schedule to be announced.

To find out what stations in your area carry these radio programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.
Smithsonian World: The season's second show, "Selling the Dream," explores the impact of advertising on the American cultural landscape. It airs February 13 at 9 P.M. EST. Check local listings.
Smithsonian Presents Invention: A new series of half-hour television programs looks at the people and ideas that have shaped our lives. The series airs on the Discovery Channel every Tuesday at 9:30 P.M. EST. Check local cable listings.

Smithsonian National Associates

This month the Program will visit Berkeley, California; Athens, Georgia; and Montgomery, Alabama. The Berkeley series (February 21-24) features programs on space science, dinosaurs and anthropology. Events in Athens (February 15-17) include lectures on Civil War photography and veterinary medicine. In Montgomery (February 22-24), programs will focus on Chinese cloisonné and Southeastern folk art.

For further information, write or call U.S. and International Events Program, 490 L'Enfant Plaza, S.W., Suite 4210, Washington, D.C. 20560; (202) 287-3210.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call (202) 357-3030. Here are some February events:
The Enigma of the Romanian Revolution (February 19; 7 P.M.) Lecture by Romanian scholar Vladimir Tismaneanu.
Vehicles of Tomorrow with Paul Mac-Cready (February 27; 8 P.M.) Lecture by the creator of such pioneering vehicles as the 1981 *Solar Challenger*.
Philadanco! (February 21; 7:30 P.M.) Performance by one of America's premier dance companies.
A Celebration of Architecture (February 5 and 7; 8 P.M.) Lecture by award-winning architect I. M. Pei, panel of critics.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some February exhibits:
Boise, Idaho (February 16-March 17) *Steichen and His Men: A Photographic Portrait of World War II*, Idaho State Historical Society.
Juneau, Alaska (February 1-March 17) *Tracks in the Sky: Wildlife and Wetlands of the Pacific Flyway*, Alaska State Museum.
New York City, New York (February 24-May 19) *Tropical Rainforests: A Disappearing Treasure*, American Museum of Natural History.

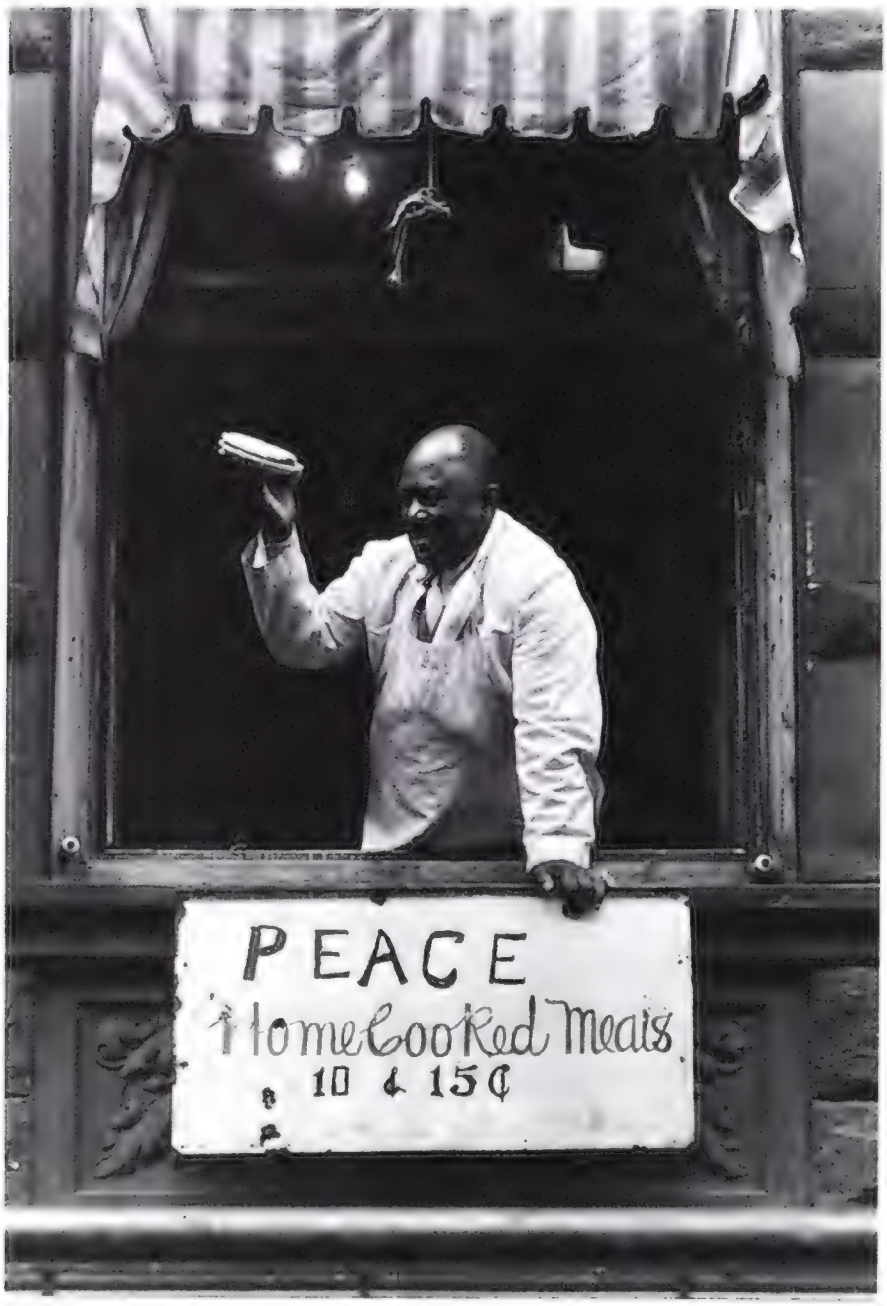
Magazines make things happen

Magazine Publishers of America and the American Society of Magazine Editors celebrate the 250th anniversary of magazines in America.

Aaron Siskind's Harlem document

Early in his distinguished career, photographer Aaron Siskind recorded life as he saw it in Depression-era Harlem. In images etched in black and white, he captured the rich diversity of that community, revealing without sentiment the combined qualities of bleakness and strength that characterized its inhabitants. His individual vision stands as striking testimony to the life that was Harlem in the 1930s. Sixty of these eloquent portraits are on view through May 27 in "Harlem: Photographs by Aaron Siskind, 1932-1940" at the National Museum of American Art.
Diane M. Bolz

A successful balance of esthetic concerns and social document, Siskind's images tell compelling stories about life in Harlem in the 1930s. At left, a watermelon seller peddles his produce through a tunnel of tenements. Below, a mission cook promotes the fruits of his labor; and a woman and her child sit down to eat.



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SMITHSONIAN SEMINARS AND EXPEDITIONS

Seminars

(continued from page 85)

NEW **Information Age** *March 25-28* Explore the effects of computers on society.

Animal Behavior *April 2-5*

NEW **Carrier Warfare in the Pacific** *April 8-12*

Twentieth Century Furniture *April 15-19*

NEW **Inside Smithsonian** *May 6-9* Led by writers, editors and production staff.

NEW **Air Force History** *June 12-15* Wright-Patterson Air Force Base, Ohio.

NEW **American Impressionists in Connecticut** *June 19-23 or September 11-15*

Bali (Indonesia) *June 25-July 9*

Kenya *July 4-20*

Strasbourg (France) *July 9-20*

Hawaii's Active Volcanoes *August 4-8 or August 11-14* Hilo, Hawaii.

Research Expeditions

Contribute your talent and financial resources to Smithsonian research. Work with curators in Washington, D.C. or at field sites worldwide.

Jamaica *February 22-March 4* Document the Hindu festival Pagwah.

Costa Rica *April 6-18 or July 6-18* Monitor geologic activity and collect plant specimens at an active volcano site.

NEW **Calvert Cliffs, Maryland** *May 2-11* Collect fossils along the Chesapeake Bay.

Washington, D.C. *May 21-31* Inventory sculpture in the nation's capital.

Washington, D.C. *June 16-29 or June 30-July 13* Inventory Asian and African ethnographic collections.

Front Royal, Virginia *July 6-14* Study wildlife and vegetation in the Shenandoah Valley.

NEW **Jamaica** *July 16-28* Record the East Indian festival Hosay.

For seminar brochures, call (202) 357-4700; for expeditions, call (202) 287-3210. Or, write to the address on page 85.

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By James R. Chiles

Bachelor living and the art of 'messismo'

Recently a coworker at my office brought out pictures of his first overnight kayak trip. He described how he and his brother packed their boats with gear, a few tins of food and two cases of beer. The first evening, hungry though not thirsty, they bought a fat salmon from a passing boat and impaled it on a stick, toasting it over a driftwood fire. "It was great!" he said. "Just like sushi."

Now, that's bachelor living. Though a father of three now and halfway to senior citizenship, I did my share. On and off for several years, in between semesters at college and law school, I worked on various rural house-building projects with my two older brothers and a couple of close friends. Living together in considerable disarray, we honored the ancient code of bachelors: don't pick up anything until it blocks the door.

I think true bachelor housekeeping deserves a term of its own. How about "messismo"? Unlike machismo, messismo has nothing to do with oppressing women, although it does seem to annoy them a good deal. Dormitory or fraternity life is good training, but no more than a starting point. To reach its full potential, messismo seems to require at least three or four young men, living together on the outskirts of civilization. It is doubtful that messismo can blossom within earshot of a washing machine or dishwasher, which are its natural enemies. Fortunately, our bachelor paradise had neither.

The three-room farmhouse where I learned the way of messismo sat alongside a picturesque county road skirting the Ozarks of southern Missouri. The rental of $30 per month was about right for our budget. We gloried in the dependability of the house's simple amenities, such as the oak-sided outhouse a few paces to the west. Each winter we dried our boots by a cast-iron stove fueled with bolts of oak and osage orange. We had rural co-op electricity, which powered our early model microwave oven and a stereo for our Linda Ronstadt albums. And the house had running water—in the backyard, from a hand pump over a well.

Like most bachelors, we ate a great deal but never did much cooking. We blended our own breakfast cereal, an abrasive mix of flaxseed flakes, uncooked oatmeal, puffed wheat and Grape-Nuts. We ate it raw out of one-pint aluminum mugs, mixed with honey and unhomogenized, unpasteurized milk fresh from the Guernsey up the road.

The cow's owner also sold us fresh fruit pies and huge rounds of farmer cheese at prices too low to mention. Lunch, every day without fail, was cold springwater and a cheese, tomato and onion sandwich. Dinner was corn chips, hot sauce and beer, or occasionally a vegetarian pizza baked in the wood-fired kitchen stove. And beer. We toasted our sandwiches, and washed our cutlery afterward, in an Oster electric skillet. We stored our clothes upstairs in corrugated boxes. Bedtime found us in sleeping bags in the attic because there wasn't enough floor space anywhere else. When weekend visitors got numerous enough, we moved over to the barn to sleep. My oldest brother liked sleeping in the hayloft so much that he kept an alarm clock there.

"It's kind of like camping out inside," observed a visiting female.

Our daily work was shaping logs from a nearby sawmill and using them to build massive vacation houses. Each morning, three or four of us wedged into a tiny Ford Pinto, along with axes, wedges, cant hooks, two toolboxes, gas and oil cans, and a chain saw. (We could have fit more, but we wanted to leave room to fit a stack of firewood on the way back each evening.) It reveals something about the priorities of messismo that my brother Mike was serupulous about oiling and cleaning that chain saw regularly, but he always did it on our kitchen table and usually while the rest of us were finishing dinner.

Even messismo has its own decorum—its Mr. Manners, if you will. We swept the house before every party. We never stored our hundred pounds of high explosives with the rest of the tools in the living room. However, we did use the attractive waxed cartons, when emptied of blasting gelatin, to store science fiction books in the corner. We washed our dishes at least twice a week—or told each other to, anyway.

In 1976 our household and two other young men carried the message of messismo into the wide world during a cross-continental bicycle trip. Stopping every night at a state or county park, we cooked scrambled eggs or Tuna Surprise in a huge saucepan balanced dangerously over a tiny gasoline stove. We dried our clothes under the morning sun by draping them across the shrubbery, and cleaned picnic tables by flipping them over and spinning them around on the dew-damp grass. On rainy days, we tarried in small-town launderettes to wash socks, fix sandwiches and disassemble our bicycles on the folding tables.

But, after five rollicking good years of working and traveling like this, the end came swiftly. Now, out of our original group of brothers and friends, only one remains a bachelor. And he has fallen far from messismo; the last time I visited him, his washing machine was going. But I am not discouraged, for as all our wives know, messismo never surrenders but only goes dormant. Someday the old group will reassemble for a week or two of camping, and we'll revive the old ways by tossing salads inside paper bags and taking over launderettes. I, for one, can't wait.

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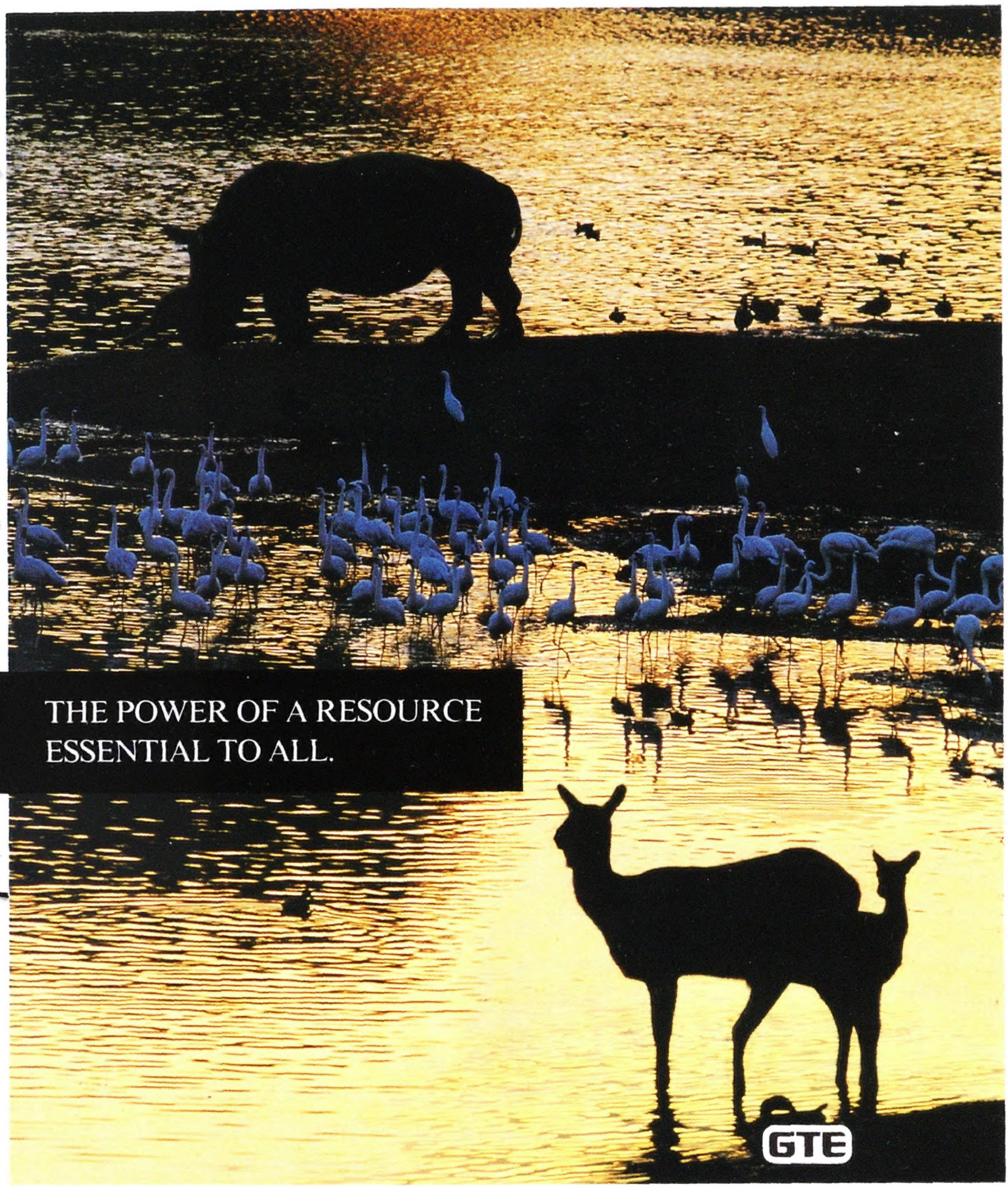

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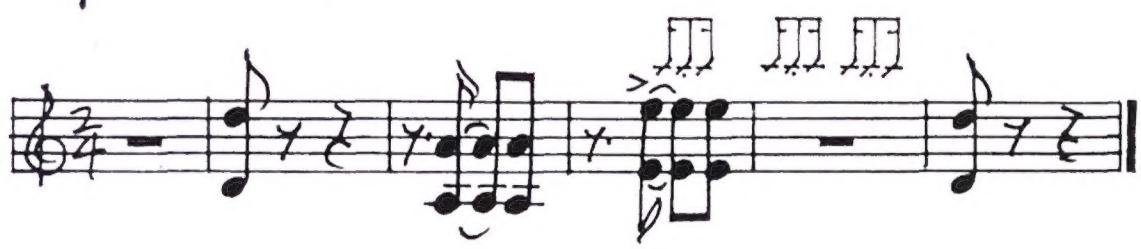

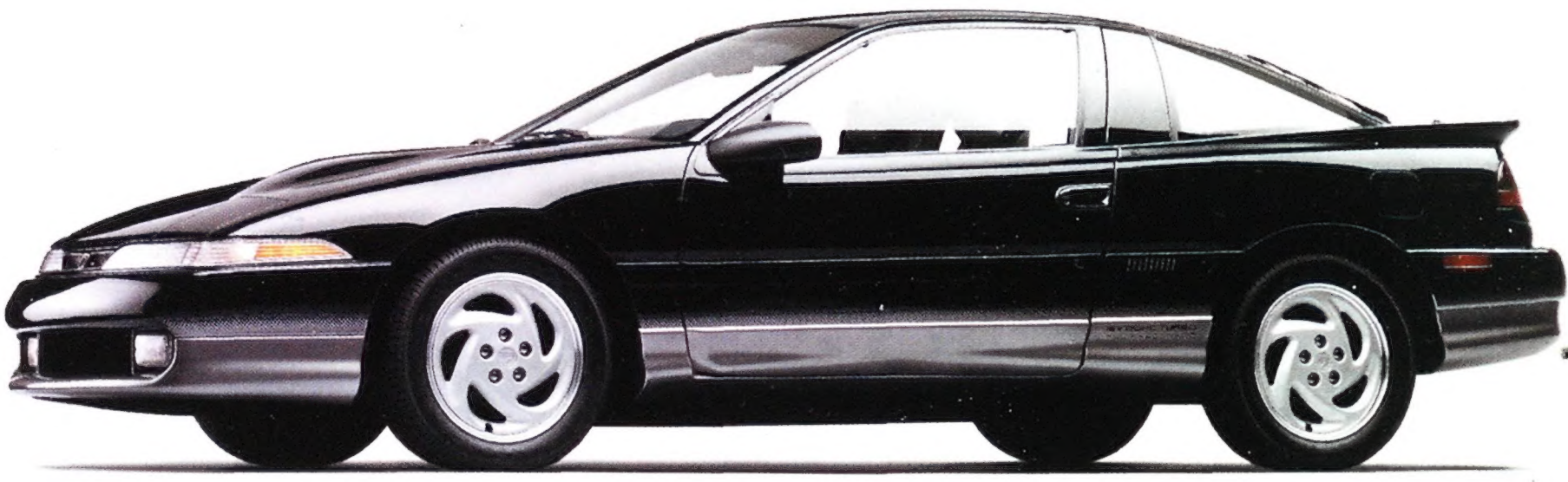

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